GOVERNMENT OF NORTHERN IRELAND.

Ninth Annual Report

OF THE

Ministry of Agriculture,

1929 - 1930.

Presented by Command of
His Grace the Governor of Northern Ireland.

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Government House,

Hillsborough,

Northern Ireland,

8th May, 1931.

SIR,

I am directed by His Grace the Governor to acknowledge the receipt of your letter enclosing the Ninth Annual Report of the Ministry of Agriculture for Northern Ireland for the year 1929–30.

I am, Sir,

Your obedient Servant,

OSCAR HENDERSON,
Lieut.-Commander,
Private Secretary.

The Secretary,

Ministry of Agriculture,

BELFAST.

GOVERNMENT OF NORTHERN IRELAND.

NINTH ANNUAL REPORT

OF THE

MINISTRY OF AGRICULTURE.

To His Grace, James Albert Edward, Duke of Abercorn, K.G., K.P., Governor of Northern Ireland.

May it please your Grace,

I have the honour to submit the Ninth Annual General Report of the Ministry of Agriculture, covering the operations of the Ministry from the 1st October, 1929, to the 30th September, 1930.

The Report is divided into two parts, the first dealing with the general conditions of agriculture in Northern Ireland during the year and the broad principles upon which the administration of the various Acts and Schemes under the direction of the Ministry were carried out, and the second with detailed reports and statistical tables dealing with various aspects of the work of the Ministry.

The agricultural year ended 30th September, 1930, was in many respects a somewhat difficult one for farmers. The business and industrial depression which set in towards the end of 1929 naturally exercised a considerable influence upon farming prosperity in Northern Ireland on account of the extent of our dependence upon the large industrial populations of Belfast and of Great Britain for a market for our agricultural produce. The decline in general wholesale prices which occurred throughout the year extended to agricultural produce and the weighted index number of the principal classes of agricultural produce sold off farms in Northern Ireland declined to 82, as compared with 87 in the previous twelve months and 94 in the year ended 30th September, 1928. On the other hand an even greater fall occurred in the weighted index number of the prices of agricultural requisites from 97 in the agricultural year 1928/29 to 82 in the year ended 30th September, 1930. The main cause of this decline in the index number for agricultural requisites was the fall in the prices of feeding stuffs, the index number for which declined from 102 in 1928/29 to 84 in 1929/30. This fall in the price of feeding stuffs was undoubtedly of great benefit to live

stock farmers, especially in view of the fact that live stock prices were well maintained during the year and in some cases even increased. On the other hand prices for commodities, such as oats, potatoes, hay, flax, farmers' butter, eggs and poultry, showed a fairly substantial decline and tillage farming was adversely affected during the year.

The agricultural statistics collected in June, 1930, reflected the poor prices realized for the crops harvested in the previous autumn in a substantial reduction in the ploughed area, which declined from 563,403 acres in 1929 to 535,237 acres in 1930. This latter area is the lowest on record and represents a reduction of 102,444 acres as compared with the ploughed area in 1914, when the area under tillage was the smallest recorded in any year prior to the outbreak of the war. The principal reductions in acreage in 1930 occurred in the case of oats, which declined from 314,087 acres in 1929 to 306,809 acres in 1930 ; potatoes, where the reduction was from 151,804 acres to 136,294 acres ; and flax, the area of which fell from 33,911 acres to 28,507 acres.

The agricultural returns for 1930 also revealed a substantial reduction in the number of cattle from 699,989 in 1929 to 672,776 in 1930. In view of the fact that prices of cattle were well maintained during 1929-30 the reason for this decline is probably to be found in the fact that on account of the poor prices for crops farmers took the opportunity of the relatively good prices for cattle to augment their incomes by selling more stock than would normally have been the case. To some extent the reduction in cattle numbers was offset by a further increase in the sheep population from 654,589 to 704,100, while there was also an increase in the number of pigs from 192,058 to 216,315, probably due to the abundance and cheapness of potatoes. An increase of about half a million also occurred in the poultry population upon which our small farmers so much depend and which now amounts to almost nine million.

Such, in broad general outline, were the economic conditions under which agriculture was carried on in Northern Ireland during the year. In the expenditure of the monies allocated to it for the administration of agricultural services the Ministry has endeavoured to utilise the funds at its disposal in those ways which are most likely to promote the greatest monetary return to farmers under existing economic conditions. The three main directions in which the activities and funds of the Ministry have been expended are dealt with in later sections of this Report. First and foremost in the activities of the Ministry are those devoted to an improvement in the general standard of farming practice, the dissemination of the lessons of agricultural education and the furtherance of scientific research. At

no time in recent years has the need for agricultural education been greater. Certainly, it is not in time of depression that any diminution should occur in expenditure upon education and research. In this connexion the following resolution passed by the Research Committee of the Imperial Conference of 1930 is significant :—

> "The Research Committee of the Imperial Conference, being convinced that progress will in the future be dependent to an increasing extent upon the growth and application of scientific knowledge, desire to direct the attention of the various Governments of the British Commonwealth of Nations to the importance of making adequate provision from State funds for the steady pursuit of scientific research into the various problems affecting the material well-being of mankind. They also desire strongly to urge their view that the severe economic depression from which the British Empire, in common with the rest of the world is now suffering, should be regarded as a reason not for the curtailment, but for the expansion, of expenditure on research. The greater utilisation of the help which science can give will be a potent factor in the rehabilitation of existing industries, including agriculture, no less than in the development of new ones."

So far as agriculture in Northern Ireland is concerned I can wholeheartedly support the terms of this resolution convinced, as I am, that the key to any permanent amelioration of the conditions of our farmers in the present depression can only be found in the wider dissemination of a knowledge of those principles of improved farming practice which scientific research makes available. Educational work in connexion with agriculture has now been carried on for many years, but the need for such work was never greater than at the present time when farmers are confronted with low prices and poor markets.

Important as is educational work on the side of production, however, an improvement in marketing conditions is no less important and further additions were made during the year to the existing code of legislation in connexion with the marketing of agricultural produce. Special attention has also been directed to the improvement of our live stock population. In these three directions—better farming, better live stock, better marketing—I am convinced that the best hope for the future of agriculture in our province is to be found.

The extent of the Ministry's activities in these various directions naturally depends upon the funds provided by Parliament. The total expenditure on agriculture incurred during the year ended 31st March, 1930, may be summarized under the following

broad heads :—

Agricultural Research and Faculty of Agriculture (including Building Grant to Queen's University, grants towards Endowment of Hillsborough Research Station, Capital Expenditure thereon, and certain Statutory Services	£32,208
Agricultural Education	43,947
Live Stock Schemes	35,262
Diseases of Animals Acts	24,172
Afforestation	20,030
Flax and Potato Industries	11,648
Marketing of Agricultural Produce	6,050
Grants for Improvement of Agricultural Holdings and for Repair of Damage caused by Floods ..	2,682
Subsidies to Shows	2,234
Improvement of Dairying	1,817
Collection of Agricultural Statistics	1,956
Miscellaneous Agricultural Services	901
Ordnance and Geological Surveys	9,020
General Expenses	51,438
Total	£243,365

Of this total sum of £243,365 the greater part was defrayed from annual votes by Parliament. Contributions from sources other than votes, however, included a sum of £7,825 from the Agricultural Development Fund in aid of expenditure on Live Stock and Poultry Schemes. This Fund, it will be recalled, was established by the Exchequer and Financial Provisions Act (Northern Ireland), 1927. Of the total sum of £40,000 which has been issued to the Fund, the balance remaining available at the 31st March, 1930, was £21,721. Contributions from local authorities totalled £19,409 comprising (*a*) a sum of £10,661 being the produce of a rate of 1d. in the pound levied by the several County Councils for the purposes of agriculture and other rural industries in accordance with Section 78 (1) of the Education Act (Northern Ireland), 1923, (*b*) a sum of £3,363 provided directly by the County Councils towards expenditure in respect of scheduled diseases of animals and (*c*) a sum of £5,385 levied on the counties and county boroughs for the purpose of the General Cattle Diseases Fund, being the equivalent of a rate of ¼d. in the pound. The assessment made was the third since the establishment of the Fund in 1926.

It will be seen, therefore, that out of the total expenditure only £27,234 come from monies other than those voted annually by Parliament. The existing financial stringency has necessarily made it increasingly difficult for me to approach Parliament

for increased funds for agricultural development. I am, however, convinced that a much greater sum than that at the disposal of my Department could profitably be expended on the development of the agricultural industry in Northern Ireland—an industry which employs approximately 26 per cent. of the employed population of the country and which is responsible for the production of approximately one-third of the value of the net output of the province. Throughout the year under review every effort has, however, been made to administer the services of the Ministry with due regard to economy, and to expend the funds available to the best advantage. The general nature and scope of these services and the character of their administration may be read in the following pages.

Agricultural Education.

As already indicated, it is my belief that there are few activities of the Ministry which afford greater scope than those connected with agricultural education and research. The scattered nature of the agricultural community, the small scale upon which agricultural operations are carried on and the large number of separate agricultural holdings, renders any general improvement in the standard of farming practice a slow and difficult task. Yet the wide differences which are met with daily in the standard of farming, and the economic position, of occupiers of farms in different parts of the Province is an ever present indication of the wide gulf which exists between the good farmer and the backward one. To some extent this difference may be due to a difference in general education and in this respect the Ministry has never undervalued the importance of a sound system of general education, such as is provided by our rural schools, as a basis for subsequent agricultural education and instruction of both adolescents and adults. Only on the basis of a satisfactory primary education can later instruction on agricultural and technical subjects be well founded.

Adolescent Education.—In connection with the education of the sons and daughters of farmers a complete system of training is in operation extending from the winter agricultural classes conducted by the Instructors in Agriculture up to the Agricultural Faculty of Queen's University. During the year covered by this Report winter agricultural classes for the sons of farmers were held at twenty centres throughout the six counties. They were attended by 355 students and of this number 151 were awarded certificates. The syllabus of instruction did not differ materially from the syllabus of the previous year. In addition to the ordinary course of instruction in Agriculture, instruction in Horticulture was given at all centres, instruction in Veterinary

Hygiene at sixteen centres and instruction in Poultry-keeping at four centres. Details of the centres at which instruction was given and the number of students attending at each centre will be found in Appendix III.

The next stage in the Ministry's scheme of instruction after the winter agricultural classes, is the Agricultural and Horticultural College at Greenmount. This college, which is situated on a mixed tillage farm of 242 acres near the town of Antrim, possesses the most modern equipment for a course of training in agriculture. Courses of training in horticulture are also provided and a large garden, an orchard and an apiary are maintained for the benefit of the horticultural students. Forty-seven scholarships, each of the value of £65, covering tuition, board residence and ordinary medical attendance were offered by the various county committees of agriculture in connection with the 1929-30 session at the college. Only 43 applicants qualified for the award of scholarships however, and of these 39 took out a course in agriculture and four a course in horticulture.

Mr. R. J. Fannin, A.R.C.Sc.I., N.D.A., was appointed Principal of the College in October, 1929, on the retirement of Mr. J. Marchbank, N.D.D., who had held the position of Principal since the establishment of the College in 1912.

The final stage in the scheme of agricultural education is the Agricultural Faculty at Queen's University, and for a number of years past the Ministry has offered each year six scholarships in Agricultural Science tenable at this University. The value of these scholarships is £100 per annum tenable for four years, and at the examination which was held in October, 1929, there were twenty-five candidates. In addition to these scholarships awarded by the Ministry a scholarship in agricultural science of similar value, which may be held at Queen's University, is provided every fourth year by the Royal Dublin Society from the funds of the Anne Hall Bequest, for competition among the sons of farmers in Counties Fermanagh and Londonderry. Yet another scholarship is provided annually by the Queen's University from the funds of the Gibson Trust.

In addition to the Ministry's scholarship holders there were four students holding scholarships from the Gibson Trust Fund, one holder of a scholarship from the funds of the Anne Hall Bequest, one holder of a Regional Education Committee scholarship, and five fee-paying students taking out the course in the Faculty of Agriculture.

Another scholarship was offered by the Ministry during 1930 in connection with Horticulture. The object of this scholarship,

which is of the value of £100 per annum tenable for four years, is to assist young men who wish to qualify for employment as a county horticultural instructor, or for other similar appointments in Northern Ireland. The scholarship course is designed to afford a thorough practical, scientific and commercial training in horticulture. Details of the syllabus will be found in Appendix III.

In addition to the provision of scholarships at the Queen's University of Belfast, the Ministry offered two scholarships each of the value of £101 10s., for training in creamery management. In accordance with an arrangement arrived at in August, 1928, between the Ministry, the Department of Agriculture, Dublin, and University College, Cork, the scholarship holders were admitted to the special creamery courses which are provided at the latter college. The full scholarship course consists of one term of technical training extending from October to March at University College, Cork ; an apprenticeship at practical work in a selected creamery in Northern Ireland during the following summer ; and a further period of technical training from October to March of the ensuing winter at the college.

The provisions for the training of young men and boys which have been referred to above are supplemented by two schools for the training of girls in the various duties which fall to woman's lot in the ordinary every-day life of a family farm. These schools are the North-West School, Strabane, and the Ulster Dairy School, Cookstown, and they provide courses of instruction dealing with the most up-to-date methods in poultry-keeping, butter-making and rural housewifery.

At the North-West School the courses of instruction are more elementary than at the Ulster Dairy School and are mainly designed for girls who intend on the completion of their course to return to their homes, but they also provide an excellent preliminary training for girls who wish to take out the more comprehensive course at the Ulster Dairy School. Free scholarships, covering tuition, board and residence at the School, are provided by all committees of agriculture in Northern Ireland for girls resident in their respective counties. Four courses, each of about eleven weeks' duration, are held annually at the school, at which there is accommodation for twenty-four pupils.

At the Ulster Dairy School there is accommodation for fifty pupils and here again four courses are given annually. The lengthy waiting list of applicants for admission to the school is evidence that the value of the instruction provided is widely appreciated. For the award of the school certificate a pupil must attend the school during three terms. Forty-eight pupils

qualified for this certificate during the year. The Ulster Dairy School also constitutes a training field for girls who wish to qualify for posts as itinerant instructors in poultry-keeping and butter-making. During 1929/30 three girls successfully completed the necessary course of training at the school and passed on to take out a twenty weeks' course of training at an approved poultry farm in Northern Ireland, for the purpose of gaining practical experience of poultry-keeping on a commercial scale. Four other pupils qualified for the award of creamery " apprenticeships " *i.e.* free instruction at an approved creamery in Northern Ireland, and an allowance towards the cost of maintenance. The object of this scheme is to give suitable girls who wish to become dairymaids in creameries an opportunity of obtaining practical training in creamery work. The course of training is normally of twenty weeks' duration and takes place during the summer months, and a fee for training is paid by the Ministry to the manager and head dairymaid at the creamery. On the termination of the course the girls are subjected to an examination with a view to determining whether their qualifications merit the award of the Ministry's certificate of competency in creamery butter-making.

As in past years many organised parties from Milk Recording Associations and from local branches of the Ulster Farmers' Union visited the School and were shown over the buildings and farm. Visits were also made by classes of pupils organised by the Agricultural and Poultry-keeping instructors. In all, upwards of five hundred people took the opportunity of visiting the school during the year, and in this way the nature of the instruction provided was made more widely known throughout the various districts. In the same way over 400 persons visited the North-West School at Strabane.

Adult Education.—The provision of organised instruction for young people, whether in agriculture, horticulture, poultry-keeping, butter-making or creamery practice, is probably the most straightforward and simple of the Ministry's educational activities. Although much may be done to improve the future standard of farming in Northern Ireland by the instruction of farmers' sons and daughters, yet only a fraction of the future farmers and farmers' wives of the six counties are influenced in this way, while there is the whole body of the existing farmers of the country to be considered. The inherent conservatism of the farming community generally is shared by farmers in Northern Ireland and the task of bringing home to the practical farmer the latest results of agricultural science is not always an easy one. The isolated character of the agricultural population is an equally important difficulty in the successful development of agricultural educational work amongst the farming community. Nevertheless

the demand which exists for copies of the leaflets on agricultural subjects which are issued by the Ministry shows that there is a real will to learn on the part of many members of the farming community. The comprehensive scope of the leaflets issued by the Ministry will be seen by the list given in Appendix III. During 1929/30 approximately 130,000 copies of these leaflets were distributed as compared with 165,000 in 1928/29.

There is, however, a well-known axiom that " Practice is better than Precept " and nowhere is this more true than in the case of agricultural extension work. Accordingly, one of the most important branches of the Ministry's activities in connection with general educational work in the country is the carrying out of field and other experiments where farmers may actually see with their own eyes the advantages of different kinds of treatment, cultivation, or feeding. This work is in the hands of a well trained staff of ten Instructors, stationed in the various counties, who keep in direct touch with the farmer and assist him in the solution of the various problems which arise daily in the course of his farming operations. In the more backward areas some 16 overseers are stationed, whose task is to supplement the work of the Instructors in those districts where there is greatest need for improvement. The influence which this body of Instructors and Overseers can have is apparent when it is remembered that during the year 5,284 farms were visited by the Instructors and fifty-nine lectures delivered, while 14,829 farms were visited by the Overseers. In addition no less than 3,395 demonstration plots were laid down by Instructors and Overseers with the object of letting farmers see by an inspection of the plots the advantages to be derived from the proper manuring of different crops, the use of varieties of crops which have been found to be specially suitable for particular districts and local conditions, and the demonstration of practices which are known to aid crop yields generally. Particulars regarding the demonstration plots laid down, and the general work of Instructors and Overseers in each of the six counties will be found in Appendix III. Special reference may, however, be made to the demonstrations which were again carried out in regard to the improvement of pastures by the inclusion of wild white clover along with a good seeds mixture when laying down to grass, and by the application of suitable manures, particularly phosphates. In the latter connexion the value of the various substitutes for basic slag, such as Gafsa, Rock Phosphate and Semsol, were demonstrated. The greater part of this work on the demonstration of pasture improvement was made possible through a special Development Grant. In general the majority of the demonstrations carried out by the Instructors related to crop husbandry for there are obvious difficulties in carrying out demonstrations

in regard to live stock and live stock feeding on an extensive scale. Many farmers have proved willing to give the use of small areas of land for the laying down of demonstration plots in return for having this land manured and seeded and obtaining the subsequent crop. It is another matter to obtain the loan of live stock for the conduct of demonstrations in feeding and management. Nevertheless, at six centres in the counties of Down, Londonderry and Tyrone, it was possible to carry out baby beef experiments to determine the comparative values of two mixtures of cakes and meals. Comparative experiments with calves fed for stores and calves fed for beef and finished on grass were carried out at three centres in the counties of Down and Tyrone. Pig feeding experiments to compare Large White Ulster pigs, Large White York pigs and a first cross between Large White York and Large White Ulster pigs for bacon production were also conducted at ten centres, while experiments to investigate the efficiency of certain substitutes for separated milk were carried out at five centres.

Apart from the demonstrations and experiments carried out by the County Instructors in Agriculture the farms attached to the North West School, Strabane, and the Ulster Dairy School, Cookstown, provide facilities for the conduct of valuable experimental work. Details of the operations on these farms in relation to the Ministry's educational and experimental work will be found in Appendix I.

In addition to the Instructors and Overseers in Agriculture, whose work is referred to above, a number of schemes are in operation under which provision is made for the employment of Instructors in Poultry Keeping, Butter Making and Horticulture. The cost of these schemes is defrayed from the Joint Fund provided by the local agricultural rate and by monies voted annually by Parliament.

Ten Instructors in Poultry Keeping are employed by the several County Committees of Agriculture, and their whole time is devoted to the improvement of poultry keeping in their respective districts, by conducting lectures and classes, and by visiting farmers with a view to giving practical instruction and assistance when desired. During the year the ten instructors paid 7,258 visits to poultry keepers, delivered 59 lectures and conducted 13 courses of instruction which were attended by 243 pupils. Closely associated with the work of the Poultry Instructors is a scheme for the establishment of poultry stations from which poultry keepers, and especially those in backward districts and those engaged in the poultry industry in a small way, may obtain sittings of eggs from high grade stock at a reasonable price. The various county committees of agriculture award premiums to a

number of persons to keep hen, or hen and duck, and goose stations, from which sittings of eggs can be obtained. Stations at which hen turkeys can be mated with male birds are also maintained. The Poultry Instructors supervise the establishment of stations, the selection of suitable stock birds, and the blood testing of station stock for bacillary white diarrhoea. Details of the operation of the scheme will be found in Appendix I.

On the economic side of poultry keeping five poultry farms have been selected with a view to demonstrating the commercial possibilities of poultry farming when managed on up-to-date lines. The owners of these five selected farms have undertaken to furnish the Ministry with particulars as to their working, expenditure and receipts in return for a subsidy. Three of these demonstration farms are also utilised as training centres for selected pupils from the Ulster Dairy School who wish to specialise in poultry management with a view to qualifying for appointments as itinerant instructors in poultry keeping. During the period covered by this report, four girls were placed for training.

To complete the Ministry's scheme for assistance in poultry-keeping an egg-laying trial is conducted each year at the Poultry Division, Stormont. The object of the test is to provide facilities for poultry keepers to have their birds trapnested and so be able to select the best strains of birds for breeding purposes.

In four of the six counties the scheme of instruction in poultry keeping is combined with a scheme in butter making and home cheesemaking. The main object of this latter scheme is the provision of advice and practical instruction in all matters dealing with butter making and cheese making on the farm. In the two counties (Tyrone and Fermanagh) in which the scheme does not operate the manufacture of butter is principally carried on at creameries, and the Ministry employs two Inspectors in Dairying whose services are available for the provision of instruction and advice on all matters pertaining to the creamery industry. A feature of the Ministry's work in connection with creameries is the holding of Surprise Butter Inspections at various centres in Northern Ireland and Great Britain to which samples of butter are sent by practically all central creameries in Northern Ireland. The butter is called for by telegram and after being stored under ordinary commercial conditions for a period of from eight to ten days, it is judged by leading wholesale butter merchants in respect of flavour, texture, marketable appearance and packing. In cases where butter submitted to these inspections is judged to be below standard the creameries concerned are immediately visited by the Inspectors of the Ministry with a view to having the defects remedied. Creameries obtaining Standard or Premium

marks at six successive inspections are entitled to use the Ministry's special stamp for marking butter packages. When the inspection is held in Great Britain samples are displayed on the day following the inspection and an opportunity is afforded to members of the local wholesale trade to inspect the butter. These exhibitions have been found a valuable means of establishing trade connections between creameries in Northern Ireland and members of the Wholesale Butter Trade in Great Britain.

Finally, a scheme of instruction in Horticulture and Bee Keeping is in operation throughout the six counties. The nine instructors employed under the scheme paid no fewer than 8,112 visits during the year under review and delivered 110 lectures. In addition 187 demonstration plots and vegetable plots were laid down, while experiments on the control of apple scab, manuring apple trees, manuring black currants, apple thinning, black currant mite, apple capsid, and control of cabbage root fly maggot were also carried out. The services of the Instructors in Horticulture are also utilised in judging the apple orchard competitions which are held under the auspices of the Ulster Horticultural Society, in judging the competition for prizes for cottages which is held in the Counties of Antrim and Fermanagh, and in organising exhibits at Agricultural Shows.

The agricultural shows which are held at numerous centres in Northern Ireland during the summer months have been found of great value as a medium for the staging of exhibits illustrating the educational work which is being performed by the Ministry. The principal Agricultural Show in the six-county area is, of course, that of the Royal Ulster Agricultural Society, which is held at Balmoral each year, towards the end of May. As usual the Ministry arranged an educational exhibit at the Show held on the 28th, 29th, and 30th May, 1930. The exhibit covered practically all branches of farming, but particular attention was given to those sections of the industry which are proving most remunerative at the present time. A brief descriptive account of this exhibit will be found in Appendix III.

The educational importance of Agricultural Shows and Congresses has received increasing attention in recent years and a number of international organisations, such as the World's Poultry Congress and the World's Dairy Congress have been established, designed to secure international co-operation in the development of certain branches of the agricultural industry. The fourth congress held under the auspices of the World's Poultry Science Association was held at the Crystal Palace, London, from the 22nd to the 30th July, 1930. The organisation in connection with the congress was undertaken by the Ministry of Agriculture and Fisheries, London, in conjunction with the

Department of Agriculture for Scotland and this Ministry. The Ministry took full advantage of the Congress to give an outline of the work being done in Northern Ireland and of advertising the quality of Northern Ireland poultry and poultry products. Poultry breeders co-operated in a commendable manner by sending upwards of 90 live birds for exhibition. The quality of these birds compared most favourably with that of the best birds exhibited by other countries and many sales at satisfactory prices were effected. This was an important feature as there is evidence that it may lead to increased trade in stock birds with other countries in future. An imposing and comprehensive exhibit illustrating the methods of marketing eggs and poultry, and including typical examples of Northern Ireland poultry produce was staged by the Ministry. This exhibit, by drawing attention to the compulsory methods in force in regard to the purchase and preparation of eggs for export served the important purpose of emphasising the fact that the eggs shipped from Northern Ireland are of uniform grade and good quality. In this way the exhibit pointed the way to future sales and an extension of business. Supporting this exhibit was one in the trade section, organised and staged by the Wholesale Egg and Poultry Packers of Northern Ireland, which showed typical samples of poultry produce shipped from the six counties. Numerous enquiries for eggs and poultry were received at both stands, and it is believed that the exhibits will enhance the reputation of Northern Ireland poultry produce and lead to an extension of trade.

The Ministry also contributed to the paper reading programme, with papers on " Poultry Development in Northern Ireland," " The Nutrition of the Chick and its effect on growth, maturity, egg production and mortality " and " The Marketing of Eggs in Northern Ireland."

Research.

The work of the research and advisory divisions of the Ministry have continued throughout the year to be of the utmost importance in developing the agricultural policy of the country. Farmers the world over are confronted with the fact that they must for some years to come face a lower price level for the materials they produce, and must adjust their methods in accordance with the changed economic position. It is in times of depression like the present that research and investigation can be of the greatest assistance. I am convinced that the future prosperity of the agricultural industry of the province depends on the acquisition and application of knowledge which will enable farmers to reduce still further their costs of production by simplifying methods, increasing output, utilising all natural

resources to the fullest advantage, and above all eliminating waste. The field for profitable work is immense and the number of immediate problems is almost unlimited. It has been the constant aim of the Ministry's research divisions to concentrate on problems of immediate practical importance and to devise solutions which, because of their simplicity, can be applied by the farmer no matter how small his scale of operations may be. In reviewing the work of the research divisions it is impossible to convey an adequate impression of the work accomplished by confining the report to the actual work carried out during the twelve months under review. Every problem takes time and the solution frequently opens the door to an allied one, the solving of which, whilst delaying publication, enables the investigator to give to the farmer a simple and a ready method of overcoming his difficulties.

A report of the work of each division is printed in Appendix I. It will suffice for the purpose of this review to direct attention to a few examples of the work which has been accomplished or is in progress.

Examination of the position of the fruit industry in Northern Ireland showed beyond question that, as far as the apple trade is concerned, Northern Ireland could never hope to enjoy a profitable place on either the Ulster market or that of Great Britain until such time as means could be devised of reducing and ultimately eliminating the appalling ravages and waste due to disease and insect pests. No legislative action which the Government might take with regard to grading, etc., could enable growers to place on the market, in a form attractive to the purchaser, fruit bearing the visible blemishes due to disease and insect pests. Initial investigations showed that not only had these diseases spoilt the appearance of the fruit but that their ravages had reduced the crop to a fraction of what should be possible. It is no exaggeration to say that research carried out during the past six years by the Ministry's Plant Disease section has armed the fruit grower with reliable and simple methods of combating these enemies, instilled hope into a fast decaying industry and opened the door to a new and brighter future. By demonstrations and other means these results have been made visible to all who care to see, and a revolution in methods is rapidly taking place throughout the orchards of Northern Ireland. Neighbour is learning from neighbour and only a few realise how the mainspring was devised and forged.

Gooseberries provide a further example of the importance of the work in plant disease control. The ravages of the disease known as gooseberry mildew were so great that many States in Europe and elsewhere were compelled to attempt control by insisting on the burning of all affected bushes. As a consequence,

the planting of bushes in Northern Ireland had all but ceased. After seven years' work a simple method of control by summer spraying has been devised by the Plant Diseases section and the necessity for vigorous State intervention is rapidly disappearing.

Mention has been made in previous annual reports of the provision made by the Empire Marketing Board for the establishment in Northern Ireland of a station for research in poultry nutrition. Work was commenced on a small scale in 1928 and already the results are having a profound effect on the development of the poultry industry. The results so far available show that simple adjustments in the feeding of birds and the better use of such products of the farm as separated milk can be utilised to double the output and reduce the high mortality which occurs amongst chickens. There are to-day ominous signs that competition in egg and poultry products will become far keener than heretofore, mainly on account of the rapid development of the industry in Great Britain and abroad. Only those countries which are able to use home grown produce to the best advantage and are able to eliminate the waste due to disease will succeed in staying the course. It is for this reason that much of the time of the Animal Diseases Division has been concentrated upon an effort to secure control of Bacillary White Diarrhoea, one of the most troublesome scourges of the poultry industry. The disease had begun to show signs of spreading throughout Northern Ireland due mainly to the importation of affected stock and hatching eggs. Steps are, however, being taken to prevent this source of infection spreading the disease in clean areas. Unfortunately the disease can be transmitted through the eggs from generation to generation and birds apparently healthy act as carriers of infection. Infected birds can be identified by means of a blood test, the technique of which has been greatly improved by the staff of the Animal Diseases Division. A scheme has been put into operation for the testing and removal of reacting adult birds on affected farms. So far the results have been very encouraging and the Ministry is satisfied that with the continued support of poultry keepers it is possible to eliminate this disease.

Unfortunately poultry is not the only item in our valuable livestock trade where disease takes a heavy toll and accounts for far too high a proportion of the cost of production. A record of the progress which is being made in attacking such cattle problems as abortion and sterility is contained in the report of the Animal Diseases Division, but I should like to emphasise from the public as well as the purely agricultural viewpoint the supreme importance of the efforts which are being made by the Dairy Bacteriology Division to provide the public with Grade A tuberculin tested milk and at the same time make a start on the extremely difficult problem of ridding our stock of the terrible

scourge of tuberculosis. One of the greatest stumbling blocks to progress is the lack of an enlightened public and in this diection much could be accomplished both by the medical profession and the press to enlighten public opinion and thereby simplify enormously the task which confronts the Ministry. Few realise that the Bovine Tuberculosis Order only gives Local Authorities power to condemn milch cows which show clinical signs of tuberculosis or in lay terms are suffering from advanced tuberculosis. If all such cows were removed the fact still remains that a proportion, probably about 30 per cent. of the milking cows in this and every other European country are suffering from tuberculosis and are a source of public danger. The State is powerless as far as drastic action is concerned. The slaughter of such cattle would create a milk and beef famine. To attempt a cure by such means would be worse than the disease. The Ministry has, therefore, aimed at establishing as rapidly as possible throughout Northern Ireland herds of milch cows which are free from tuberculosis. All such herds have been licensed and only milk from such licensed herds can be described as Tuberculin Tested. In the short space of two years the Dairy Bacteriology Division has succeeded in establishing 25 tuberculin tested herds in Northern Ireland and of perfecting the control to such an extent that Northern Ireland may now fairly claim to be leading the way in this important development. Moreover, Grade A Tuberculin Tested Milk can now be obtained, albeit in limited quantities, in almost every important town in Northern Ireland. Northern Ireland enjoys the distinction of possessing the cheapest supply of Grade A Tuberculin Tested Milk in the British Isles, indeed in any part of the world. It is being retailed in Northern Ireland at 1d. or 2d. per quart more than normal milk compared with 6d. to 8d. per quart more than normal milk in England and Scotland and at such a reasonable price it is well within the reach of every section of the community. The rapid development of this movement depends entirely on public support and enlightenment. Much of the public expenditure on health services could be eliminated once it became general knowledge that clean raw milk from healthy cows was the only ideal food for children and that by no known artificial method can the normal milk supply be rendered clean and safe without impairing its feeding value in some degree.

Although the policy of the Ministry is very definitely the encouragement and development of the livestock industry, the fact must never be lost sight of that live stock constitutes in the main a means of marketing crops and that successful live stock production is in a very large measure dependent upon the cheapness with which crops, whether oats, grass, turnips, etc., can be raised for consumption by stock. Just as in the case of livestock so in crops, the most effective method of reducing costs is by in-

creasing yields and eliminating waste. The principles of the work may appropriately be illustrated by an example drawn from the Ministry's Plant Breeding Division. A very real difficulty which confronts farmers on good tillage land is to secure a crop of lea oats which will stand. Indeed this is a problem which is almost universal with lea oats since the introduction of wild white clover in the grass seed mixture. The nitrogen of the ploughed up lea due to the nitrogen stored by the clover induces in the succeeding oat crop a long weak straw which, being unable to carry the filled ears of grain, particularly if the weather towards harvest is unfavourable, lodges. As a consequence the crop is a much more expensive one to harvest. Much grain is lost due to shedding and the quality of the grain suffers considerably. Work on this problem was commenced seven or eight years ago. First a black oat of potato type was obtained by crossing Potato Oat with Black Tartary. A selection from this cross was crossed with Victory oat and by subsequent careful selection the Plant Breeding Division has evolved a white oat which possesses a very stiff erect straw and a small dense ear. The oat variety trials conducted throughout the counties show that not only does this oat, which will in future be known as Stormont Arrow, stand up when other varieties lodge but also that it is the heaviest yielder. Arrangements have, accordingly been made whereby Stormont Arrow seed oats will be available to farmers in limited quantities in the spring of 1932. In certain areas in Northern Ireland considerable difficulty is experienced owing to climatic conditions in securing early sowing and as a result harvest is late and considerable loss of and damage to the crop is sustained. To meet this problem an early ripening oat of heavy yielding quality and of the Victory type has been evolved by careful selection from crosses of Supreme and Victory oats. This early ripening oat is being tested out in the county oat variety trials and is in course of propagation for distribution to farmers.

The difficulties experienced with regard to the improvement of the flax crop have in a large measure been overcome by the establishment of a small propagating station in Essex where seed can be raised up to a bulk of one ton, at which stage it is sent to Canada and other Dominion countries to be bulked in commercial quantities which are subsequently available for Northern Ireland farmers. Two varieties of flax, namely Stormont Gossamer and Stormont Cyrus have been evolved by the Ministry's Plant Breeding Division. These varieties give substantially heavier yields than " J.W.S. " and are free from the defect of length of fibre attributed by many spinners to " J.W.S. " A ton of one or both of these varieties will shortly be sent to Canada for commercial bulking under the auspices of the Dominion Department Agriculture.

Live Stock.

The predominant place which is occupied by live stock and live stock products in the agricultural economy of Northern Ireland is well known. The census of production which was taken in 1925 revealed that more than 78 per cent. of the total value of the agricultural output of the province was composed of live stock and live stock products, and each of the principal groups of the live stock industry—live stock, eggs and poultry, and milk and dairy produce—exceeded the value of the output of farm crops. It is natural, therefore, that the closest attention should be devoted by the Ministry to the live stock industry in all its branches.

Out of the total expenditure of £191,927 incurred by the Ministry on Agricultural Services in 1929-30 no less than £61,251 or approximately 32 per cent. was directly connected with one or other branch of the live stock industry and its development. Thus £35,262 were expended on Live Stock schemes, £24,172 on the administration of the various legislative measures passed in connexion with Diseases of Animals, and £1,817 on the Improvement of Dairying. In addition a considerable part of the expenditure on Agricultural Research and on Agricultural Education was devoted to live stock improvement. Part of the expenditure upon the live stock industry came from the Agricultural Development Fund which was created in 1927 with the object of furthering schemes for the improvement of cattle, blackface sheep and swine. The expenditure from this Fund in 1929-30 was £7,825 and at the 31st March, 1930, a balance of £21,721 remained available within the Fund.

In so far as the financial resources of the Ministry have permitted, the various schemes which have been instituted with a view to the furtherance of the live stock industry have been fully developed and it continues to be one of the cardinal objects of the policy of the Ministry to do everything possible to further the interests of this industry which can be truthfully described as the backbone of Northern Ireland agriculture.

The various schemes in connexion with live stock development are dealt with in the following paragraphs and provide an indication of the wide range of the Ministry's activities.

Horse Breeding Schemes.—The importance of horse breeding in Northern Ireland has been very much less in recent years than was the case before the war. The spread of motor transport, and the great falling off in the demand for horses for army purposes, especially on the part of Continental countries, has resulted in a considerable decrease in breeding. The decline in

the area under the plough has meant that even the demand for horses for agricultural purposes has been poor.

The extent of this falling off in the demand for horses in Northern Ireland is apparent from the agricultural statistics. Whereas, in 1910 the number of horses used for traffic and manufacture in Northern Ireland was 13,796, by 1930 this number had declined to only 7,114. On farms the decline in the ploughed area from 636,213 acres in 1923 to 535,237 acres in 1930 was accompanied by a reduction from 100,116 to 87,101 in the number of horses being used for agricultural purposes.

In such circumstances it is natural that horse breeding has been at a low ebb in recent years. Whereas in the five years 1909-13 the average number of unbroken horses on farms in Northern Ireland was 16,177, in 1926-30 the average number was only 5,780. There has been a considerable demand recently for good light horses, especially hunters and chasers at improved prices, while good heavy or agricultural horses are also commanding better prices and are being more sought after. There seems reason to believe, indeed, that the decline in horse breeding has passed its nadir and that there should be an increase in breeding during the next few years. Quite apart from any increase in the demand for horses from outside Northern Ireland the rate at which breeding has taken place in recent years has been quite insufficient to maintain the existing supply of horses on farms and although the number of horses used for agriculture has been allowed to fall to some 87,101 this downward movement cannot continue much further.

The Ministry's efforts to improve the breeds of horses in Northern Ireland are made through (1) the Horse Breeding Scheme and (2) the Horse Breeding (Northern Ireland) Act of 1926. These two measures are complementary to each other. Unsuitable sires are eliminated by means of the Act and under the scheme good class animals are introduced and placed out for the service of farmers' mares at small fees. The scheme was again in operation in each county in 1930, its terms being identical with those in force in 1929, except that county committees were permitted to make a regulation fixing the fees payable to grooms in charge of premium stallions.

The amount expended in 1929-30 by the different county committees in premiums to stallions was £2,013 and the total number of premiums paid was 42½ of which 16 were in respect of Thoroughbred stallions, 22½ in respect of Clydesdale stallions and 4 in respect of Irish Draught and Half Bred stallions. In five instances (one in county Down, two in county Londonderry and two in county Tyrone) partial premiums only were awarded by

the county committees for Clydesdale stallions and this explains how the figure of 22½ premiums in the case of this class of stallion occurred.

The maximum value of premiums fixed in the scheme for Thoroughbred stallions was £70 and for any other breed £45. The value of the premiums adopted for Thoroughbreds ranged from £50 to £70, for Clydesdales from £35 to £45, and for Irish Draught and Half Bred stallions from £35 to £45, Full details of the expenditure of the various county committees on premiums to stallions, and the rates of premium paid in each county, are shown in Appendix III.

In addition to the normal regulations under the Horse Breeding Scheme the Londonderry County Committee made a regulation requiring the owner of a mare being offered for service to hand to the owner of the stallion, prior to the service of the mare, a Veterinary Surgeon's certificate that the mare was sound. The County Committee of Agriculture for Down made a regulation that the stallion must stand for service at a market town in the county at least one day each week during the season. No special regulations were made by any other county committees.

The total number of mares served during the year by Thoroughbred stallions was 997, by Clydesdale stallions 1,433, and by Irish Draught and Half Bred stallions 332. Details of the number of services by each class of stallion in each county are given in Appendix III.

In addition to the premiums for stallions already referred to some nine loans were granted during 1929-30 for the purchase of stallions. Two of the animals purchased were Thoroughbreds, six were Clydesdales and the remaining one was a Half Bred. The Thoroughbreds were located in counties Antrim and Down, the Clydesdales in counties Antrim (2), Fermanagh, Londonderry and Tyrone (2), and the Half Bred in county Down. Each borrower was also given a subsidy equal in the case of the Thoroughbreds to two-thirds of the purchase price and in the case of the Clydesdales and Half Bred to one-half of the purchase price, and was required to bind himself to keep the animal for the period of the loan (viz. 5 years) in the district in which it had been located.

Cattle Breeding.—The agricultural statistics for 1930 showed a reduction of 27,213 in the total number of cattle in Northern Ireland as compared with 1929. That the cattle population of the province fluctuates considerably from year to year is, however apparent from the figures below and no special significance

would appear to attach to the decline which was recorded in 1930.

Number of Cattle in Northern Ireland.

	Milch cows and in-calf heifers.	Other Cattle.	Total.
1930	256,303	416,473	672,776
1929	264,060	435,929	699,989
1928	273,883	464,122	738,005
1927	270,283	427,056	697,339
1926	259,997	406,405	666,402

It is satisfactory to be able to record that the average prices realised for cattle during 1929-30 were higher than in the previous year. During the twelve months ended 30th September, 1930, the average price of £11 12s. 6d. per head for store cattle was 9/- to 10/- above the price paid in the twelve months ended 30th September, 1929. Milch cows at an average price of £18 7s. 0d. were 5/- per head dearer but fat cattle averaged only slightly better prices. Young calves under 6 months, however, at an average price of £3 8s. 0d. were appreciably dearer than during the previous 12 months when the average price was only £2 13s. 0d.

The cattle industry in Northern Ireland may be described as two-fold in character. In the first place there is a large surplus of store cattle exported annually for fattening in Great Britain. But along with this trade in stores there is also a large production of milk and milk products. The total output of milk in Northern Ireland has been estimated at ninety-eight million gallons of which only about thirty million gallons are required for human consumption. As a consequence there is annually a large surplus of milk available for manufacture into butter. In the western counties this surplus milk is in the main manufactured into butter in creameries, while in the other counties the surplus milk is, for the most part, churned on the farm. The activities of the Ministry in connexion with the creamery industry and also with the manufacture of butter on farms are referred to elsewhere in this Report. The circumstances surrounding the production of milk in the six-county area are, however, of the greatest importance in connexion with the cattle breeding schemes of the Ministry. Apart from a few districts around Belfast and local towns there is in Northern Ireland no specialised area devoted to milk production for the fluid milk market. In Great Britain, with its large fluid milk market, farmers are able to specialise in milk

production all the year round. In the United States again milk production in the North Eastern dairy belt is just as specialised as the production of beef cattle in the range country of the western States. Denmark, again, has specialised in milk production for butter-making all the year round, while Argentine is principally concerned with the commercial production of beef cattle. Consequently in other countries it has not been necessary to pay the same attention to dual purpose cattle as has been the case in Northern Ireland. In the six counties, however, the production of store cattle and the production of milk are so intimately associated on almost every farm that no live stock policy pursued by the Ministry could hope to attain success if either of these aspects of our cattle industry were neglected. The rearing of good quality calves is an essential feature in the development of our export trade in store cattle. A good supply of milk for manufacture into butter, whether in creameries or on farms, is also important, while the separated milk from the creamery or the churn is required for the feeding of calves, pigs and poultry.

For these reasons the Ministry has encouraged, and will continue to encourage, the breeding of dual purpose cattle which are capable of giving high yields of milk and also of breeding good quality calves.

The main instrument for the improvement of the cattle industry in Northern Ireland has been the Live Stock Breeding Act of 1922, under which all bulls used for service require to be licensed by the Ministry. A report upon the detailed operation of this Act will be found in Appendix II.

In addition to this legislative enactment a special cattle breeding scheme is in operation, designed to facilitate the distribution of high grade sires throughout the country. The scheme provides for the payment of premiums to farmers who undertake to keep bulls which have been passed by the Ministry's Inspectors as up to the required standard, and who agree to comply with the conditions governing the earning of the premium. The selection of the most suitable farmers to keep premium bulls in any county is left in the hands of the appropriate county committee who, when making their selections, endeavour to ensure not only that local requirements shall be met, but also that small farmers shall secure as large a share of the benefits to be derived from the scheme as is practicable.

The scheme provides for the award of premiums to bulls of the following breeds :—Shorthorn, Registered Dairy Shorthorn, Registered Dairy Non-Pedigree Shorthorn, Aberdeen Angus, Hereford and Galloway. Bulls of the last-named breed are,

however, eligible for premiums only if placed in a prescribed locality in the eastern mountainous area of county Antrim for which the breed is particularly suitable and which specialises in the production of store cattle of the Galloway type for shipment to south-west Scotland, where there is a special demand for these stores.

Two centres in Northern Ireland are recognised for the selection of bulls for first year premiums, namely, the spring sales held annually under the auspices of the Royal Ulster Agricultural Society and the North-West of Ireland Agricultural Society, at Balmoral and Londonderry respectively. In addition, however, the Royal Dublin Society's spring show and sale at Ballsbridge is also a recognised centre for applicants who prefer to buy there, and the annual sale of Galloway bulls held at Cushendall is the approved centre for the supply of premium bulls of this breed to selected applicants in the prescribed area in county Antrim. The inspection for continuation premiums takes place each year at local centres appointed by the Ministry. Bulls which prove satisfactory may be retained for continuation premiums in second and subsequent years. In fact, the policy of the Ministry where premium bulls are breeding well is to encourage their retention as long as possible.

The value of the premiums paid during the period under review remained unchanged as compared with previous years. The maximum premium was £20, paid in the case of registered dairy shorthorn bulls with milk records on both sire and dam's side, but if milk records were kept only on the dam's side the premium payable was £17. A £15 premium was paid for a pure-bred Shorthorn, Aberdeen Angus or Hereford bull, and for Registered Dairy Non-pedigree Shorthorns or Galloway bulls the premium allowable was £13. In addition to these premiums, the owners of the bulls receive nominal service fees from the farmers whose cows are served.

The additional money from the Agricultural Development Fund enabled county committees in 1930 to place out in the poorer districts of the county 88 " special terms " bulls. These bulls are up to premium standard, but while the ultimate cost to public funds is the same as in the case of ordinary premium bulls the financial terms are more convenient to farmers in the poorer districts, for whom the special scheme is intended.

A limited number of subsidies for the purchase of high-class bulls were also granted to groups of farmers who had a reasonable number of pure-bred cows. The object is to grade up the pure-bred herds so that in Northern Ireland there may be an increased supply of bulls to help to meet the demand for animals suitable

for premiums. Breeders are required *inter alia* to keep the bulls for five years and to offer the male progeny for sale at public sales in Northern Ireland recognised for the selection of bulls for premium purposes. Four such subsidies were given in the year under review. Fourteen loans were advanced for the purchase of premium bulls.

The foregoing account of the Ministry's activities in connexion with the provision of high class sires requires to be considered along with what is being done to improve the milk yielding qualities of the dairy stock of the province.

A scheme is in operation which aims at raising the general standard of pure-bred dairy cattle throughout the country by inducing owners to mate their best milkers with high-class dairy bulls and to record the milk yields of their cows with a view ultimately to the entry in the Ministry's registers of pure-bred dairy cattle of those animals which attain the prescribed standards. It is now realised that authentic milk records are the basis of economical milk production, and among an increasing number of farmers there is a growing appreciation of the benefits to be derived from this scheme.

The procedure adopted is that inspections are carried out twice each year and those cows which are of good conformation and type are passed as suitable for provisional selection for registration. Such cows are then tested for quantity and quality of milk and particulars of those which have attained to the prescribed standards are entered in the Ministry's Registers of Dairy Cattle. During the milking period the Ministry's milk samplers visit the herds periodically and take milk samples, which are analysed for butter-fat content by the Chemical Research Division. If the cow gives the quantity and quality of milk prescribed for registration and produces a calf (after a normal period of gestation) within 14 months of the date of calving immediately preceding the milking period for which the record has been kept, particulars of the animal are entered in the appropriate register.

A second register is kept of non-pedigree dairy cattle. Cows for this register are entered in Milk Recording Associations and the milk yields are recorded for the period of their lactation, at the close of which, provided they have qualified in accordance with the conditions specified in the scheme they are inspected and, if found to be up to the required standard of conformation, are duly registered. Details of the operation of the scheme during 1929-30 will be found in Appendix III.

The operations of the schemes for the registration of dairy

cattle have naturally a close relation to the work of the general cattle breeding scheme already described, as the male progeny of registered cows are eligible to compete for the premiums offered by the Ministry. This provides a further inducement to farmers to test their cows, as pedigree bull calves supported by milk records command higher prices as premium bulls than calves from unregistered cows.

During the period under review 223 bull calves, the progeny of registered shorthorn cows were so inspected, and 99 were provisionally selected for premiums under the cattle-breeding scheme. Of this number 45 were pure-bred animals with dams and sires registered ; 22 were pure-bred with dams only registered, and 32 were non-pedigree animals with approved milk records on one or both sides. In addition, 41 bulls, the progeny of pure-bred Shorthorn cows, were inspected at owners' residences and passed as suitable for the service of provisionally selected and registered shorthorn cows.

It may be mentioned that during the period under review the Ministry published Volume II of the " Register of Pure-bred Dairy Cattle," in which particulars are given of all entries in the Registers during the period 1st January, 1924—31st December, 1928. The volume also contains appendices setting out particulars of all subsequent milk yields and calvings relating to the animals entered in Volume I which have been accepted by the Ministry since the publication of that Volume.

Finally, but by no means the least important of the Ministry's efforts to develop the cattle industry of Northern Ireland, there are the Milk Recording Associations. The growth in the number of Milk Recording Associations from 6 in 1921, with a membership of 199 and 1,244 cows under test, to 72 in 1930, with a membership of 2,832 and 14,570 cows under test, constitutes most gratifying evidence of the large degree of support which this scheme has secured throughout the province. There are many factors, such as breeding, physical conformation and feeding, which all influence milk production, but keeping records of yield and testing for butter-fat is the only means of recording the progress which is being made and is the only sure guide to successful breeding and feeding. The importance and popularity of Milk Recording Associations among the Ministry's schemes for cattle improvement is thus apparent.

Swine.—The rapidity with which changes can occur in the number of pigs is well known and the annual statistical returns show wide fluctuations from year to year. On the average of the past few years, however, the numbers of pigs in Northern Ireland have been maintained at a higher level than has been the

case for more than twenty years and there is certainly evidence that farmers recently have been paying more attention to pig-breeding than at any period since before the war.

With the object of improving swine breeding in the six counties the Ministry has in operation a scheme somewhat similar to the cattle breeding scheme. The aim is to help boar owners to keep sires of a high degree of excellence. Provision is made for the award by county committees of premiums in respect of boars of the Large White Ulster and Large White York breeds to selected farmers who undertake to comply with the conditions of the scheme. At the end of the first season boars are inspected with a view to determining their suitability for second-year premiums, and all boars selected for such premiums must reach a high standard. It may be added that premium animals are required to serve from 30 to 40 sows at a service fee varying from 2s. 6d. to 5s.

Details of the premiums awarded by the various county committees and the total expenditure under this scheme will be found in Appendix III.

With a view to encouraging the breeding of high class, first cross commercial pigs, the Ministry introduced from Great Britain one Large York boar and six gilts of the same breed. Such of the male progeny of this herd as are up to. premium standard will be available as premium boars under the scheme.

Sheep.—The steady upward movement in the sheep population of Northern Ireland has been one of the most striking features of the agricultural returns for several years past. Prices have fallen during the last few years but there can be no doubt as to the increasing popularity of sheep breeding among farmers in Northern Ireland. The number of sheep in 1930 attained a new high record of 704,100—more than double the number in 1913—and this upward movement in the sheep population has been constant since 1925. It is natural, therefore, that very considerable attention should have been given by the Ministry in recent years to the improvement of the sheep flocks of the province.

A sheep breeding scheme, similar in general principle to the cattle breeding and swine breeding schemes, is in force but separate provision is made for (*a*) mountainous districts and (*b*) lowland districts. In mountain areas the scheme aims at raising the standard of sheep in these areas by the supply of high class sires on reduced terms to selected breeders. Each applicant for a ram is required to sign an undertaking to keep the animal for at least two years in good and healthy condition, and at the end of that period the ram is, as a rule, sold to a breeder in another district—in this way the animal remains in use for three or four

years. Efforts are made to have the rams concentrated each year in particular areas, as experience has shown that this method is preferable to distributing them over widely separated localities.

Rams are selected by the Ministry, and the sale of black-face sheep held annually in Belfast under the auspices of the Ulster Ram Breeders' Association is utilised as the selection centre. A certain number of premium rams are also imported each year from Scotland, but the majority of the animals for selected applicants are obtained at the Belfast Sale.

During the season under review all county committees charged applicants the same standard rate per ram, namely £3 for all rams costing up to £10. In the case of rams costing more than £10 the selected applicant was required to defray the balance. The committees' maximum contribution was £7. It has been decided to raise slightly the price of rams to selected applicants in future. Accordingly, next season a selected applicant will be required to pay one-half the cost price of the ram and the committees' contribution will be limited to £5.

In order to demonstrate the improvement that can be effected in mountain sheep by the introduction of high class rams, breeders are encouraged to exhibit the progeny of premium rams either at local agricultural shows or at specially organised local sheep shows. In county Antrim ample facilities for the exhibition of black-face sheep are provided at the Cushendall and Glenarm Agricultural Shows and, similarly, in county Down sheep classes are provided at the Kilkeel and Castlewellan Agricultural Shows. Counties Londonderry and Tyrone continue to organise small local sheep shows at which the exhibits are mainly the progeny of the premium rams placed out in these counties under the scheme. During the year under review both counties promoted two such shows, the county Londonderry centres being Draperstown and Dungiven, while the county Tyrone shows were held at Killeter and Crenagh.

In lowland districts premiums are awarded for pure-bred rams of lowland breeds. Broadly speaking, the scheme operates on lines similar to those of the other premium schemes promoted to encourage live stock breeding. The value of the premium is £8, and rams may be awarded a second and also a third year premium provided they are approved each season by the Ministry —a third year premium is, however, granted only to rams of outstanding merit which have been changed to a new locality. As in the case of black-face sheep, the rams are selected at the autumn sales held in Belfast under the auspices of the Ulster Ram Breeders' Association.

Details of the premiums awarded and the expenditure by county committees will be found in Appendix III.

In addition to the provision of premiums one subsidy was granted towards the purchase of a Border Leicester ram to be retained for four years in a district approved by the Ministry and to be used for the service of pure-bred Border Leicester ewes.

Goat Breeding.—The Ulster Goat Society was formed in 1922 under the auspices of the Ministry with a view to encouraging small farmers and labourers, especially those resident in the more remote and mountainous districts to engage in goat-breeding. The method adopted by the Society for the furtherance of its aims is the provision of stud goats at reduced prices and the granting of premiums of £2, subject to compliance with certain conditions specified by the Society. The male goats supplied are from a reliable strain with good milk pedigrees. The Society also encourages its members to keep milk records. These records are checked periodically by the Ministry's milk sampling officers and particulars of such animals as have given a calculated yield of not less than 900 lb. of milk in a lactation period not exceeding 45 weeks are entered in the Ministry's Register of Goats, and in the case of animals registered on a yield of 1,000 lb. or over, particulars are furnished by the Ministry to the British Goat Society for entry in the Milk Recorded Section of that Society's Herd Book.

With a view to encouraging the system of keeping records the Ministry issues certificates to members of the Society whose animals qualify for entry in the Ministry's Register. Up to the present forty goats have qualified.

During the period covered by this Report the Society's normal activities continued and the Ministry further assisted by making a grant of £50 towards the general funds.

Marketing.

The activities of the Ministry which have been described in the previous pages have, in the main, dealt with the improvement of methods of agricultural production. But unless increased efficiency in the growing of crops and the rearing of stock is accompanied by equal efficiency in the sale and marketing of agricultural produce the benefits from an increase in output may prove deceptive. In all too many years recently the main problem confronting agricultural legislators and economists has been the problem of a surplus, rather than a shortage, in production. In such circumstances the question of an improvement in the existing methods and organisation for the marketing of agricul-

tural produce has received ever increasing attention. The extent, however, to which a government Department is able to further marketing reform is limited and must, in the main, be confined to what may be described as regulatory measures. Subjects, such as the inspection, standardisation, grading and marking, of various classes of agricultural produce can properly be dealt with by legislation and the standards thus adopted and prescribed can be safeguarded and enforced by the Ministry. Such legislation, however, has necessarily to be based upon the existing organisation of the trade in farm produce, and it is only within very narrow limits that the Ministry is able to influence or modify the organisation of independent traders which has already been developed over a long period of years for the movement of agricultural produce from the farm to the consumer. Consequently the main body of legislation in connexion with the marketing of farm produce which has been passed during recent years relates to the improvement in the conditions of handling, grading and packing. An account of the administration of the various Acts dealing with the marketing of agricultural produce is given in Appendix II of this Report, while a consideration of some of the more general features arising in connexion with this legislation and an appraisement of the general movement of market conditions during the year appears below.

Eggs.—The past year marked a further stage in the development of the wholesale egg trade in Northern Ireland. Market conditions have, admittedly, moved in favour of Northern Ireland, but it is safe to assume that the very satisfactory prices returned would not have been possible were it not that a sound reputation for uniform quality has been established. That reputation has been possible only through organised marketing.

It is now possible to appraise the full effect on British market conditions of the Order under the Merchandise Marks Act, 1926, which required the marking on the shell with an indication of origin of all eggs imported into the United Kingdom. The demand for home produced eggs has increased and there is now a sharp distinction in the prices returned for home produced as compared with imported eggs. So far as the Northern Ireland trade is concerned the effect has been most beneficial. Some changes in the selling front were inevitable but on the whole Northern Ireland eggs are now offered a wider market provided the quality is good. That is the dominating factor in the new situation. The prices paid for unmarked eggs are so high that the consumer is naturally most critical on this point and concentration on quality is the obvious concern of the Northern Ireland shippers if they are to retain their present favoured position on the market.

As in previous years the maintenance of a uniform high level of quality proved to be difficult during the summer months. During this period of the year deterioration is accelerated by atmospheric conditions and there is an inclination to hold up stocks in face of the seasonal rise in price. During the critical period the Ministry endeavoured, by bringing pressure to bear on the shippers, to keep the situation in hand, but it must be admitted that on the whole the quality was lower than could have been desired.

A meeting of representatives of the shipping trade was held in August to consider the matter and the conclusions arrived at during the meeting were later discussed with the Ministry. It was held on behalf of the shippers that, in summer, supplies are of poor quality by the time they reach the shipper's store. This is due to a variety of causes, such as fertility, washing and holding, and the situation appeared to call for more extensive education amongst poultry keepers (with particular reference to the production of infertile eggs and the harmful effects of washing) and closer supervision over collectors. The shippers admitted that any remedial measures initiated by the Ministry would involve increased expenditure and conceded the principle that the trade should be prepared to meet the cost.

Broadly speaking, the Ministry was in agreement with these conclusions. There is no doubt that the quality of the raw material handled by the shipper could be better, but some of the responsibility for that state of affairs must be attributed to the fact that wholesale dealers, in their anxiety to retain the good will of their suppliers, are not disposed to make any distinction in payment as between fresh and second quality eggs. However, the need for the better education of the poultry keeper in matters pertaining to production and marketing must be admitted.

As to the wholesale trade itself the work of the collectors calls for closer supervision. Speaking generally, eggs remain in the hands of collectors longer than is justifiable having regard to their perishable character. Individual transactions as between one collector and another are not in themselves questionable but the cumulative effect of a succession of such transactions is that the eggs are no longer fresh. Having regard to the importance of the industry less time should be wasted between the farm and the shipper.

Under present arrangements eggs of defective quality offered by producers are passed through various hands and it is not until tested at the store of the shipper that their quality is determined. In these circumstances it is rarely practicable to bring home to the producer responsibility for quality.

The question of promoting amending legislation to bring about the necessary changes is at present under consideration. Such funds as are necessary to defray the expense involved will be provided by way of increased licence fees. One change, which does not involve legislation, will be brought into operation at the opening of next season. The testing period prescribed in the current Rules made under the Acts is from 1st May to 31st December. Experience of recent years has indicated that an extension of this period is desirable and in consultation with the representatives of the trade it is proposed to alter the Rules for the forthcoming season to require testing from 1st April to 31st January.

An account of the administration of the Marketing of Eggs Acts, 1924 to 1928, during the twelve months ended 30th September, 1930, appears in Appendix II.

Dairy Produce.—The Marketing of Dairy Produce Act (Northern Ireland) received the Royal Assent on the 19th December, 1929. The Act did not come into operation until the 1st January, 1931, however, and during 1930 the Ministry was engaged in the general preparatory arrangements for bringing the Act into force at the appointed day. In consultation with the Advisory Committee on Dairying, Statutory Rules and Orders under the Act were made by the Ministry on the 28th October, 1930, and came into force on the 1st January, 1931.

The main provisions of the Marketing of Dairy Produce Act and Rules may be regarded under three broad headings—the registration of premises where butter is manufactured or blended, or assembled for export ; the conditions under which butter is manufactured at registered premises ; and the markings to be applied to packages of butter for export.

In regard to registration of premises, provision is made for four separate registers relating to different classes of premises, viz. :—

(1) Auxiliary creameries, that is to say, premises for the purpose of extracting cream from the milk supplies of several cowkeepers.

(2) Central creameries, that is to say, premises for the purpose of extracting cream from milk supplies of several cowkeepers, or for the assembling of cream from auxiliary creameries, for sale as cream or for the manufacture of butter.

(3) Butter factories, that is to say, premises on which by way of trade, butter is blended, reworked, or subjected to any other treatment, but not so as to cease to be butter.

(4) Wholesale depots, that is to say, premises for the purpose

of collecting, examining or classifying butter for despatch, without treatment to Great Britain. the Irish Free State or the Isle of Man.

It is obviously of cardinal importance that the owners of premises which require to be registered under the Act should be in a position to decide as to which class of registration best suits the requirements of their trade. Accordingly, during the months of November and December, 1930, arrangements were made for the holding of a series of three conferences with creamery managers and others interested in the butter industry at which the requirements and implications of the Act and Rules in regard to registration and other matters were fully explained.

The primary object of the Act was the improvement and development of the system of butter manufacture from cream separated by centrifugal force from the commingled milk supplies of a number of cow-keepers, which has for a considerable number of years been the prevailing custom at creameries in Northern Ireland, so much so that the designation " creamery butter " has come to be regarded as synonymous with butter made on this system. For this reason the word " creamery " or any colourable imitation of the word " creamery " has been restricted by the Act for use only by premises registered under the Act as a central creamery or auxiliary creamery. In addition it is provided by the Act that the designation " creamery butter " shall not be applied to butter exported to Great Britain, the Irish Free State, or the Isle of Man, unless the butter has been made at a registered central creamery. In the Rules made by the Ministry care has been taken to ensure that the position of creameries, and the use of the word " creamery," is safeguarded adequately. In prescribing markings for packages of butter exported from Northern Ireland to Great Britain, the Isle of Man and the Irish Free State, the Ministry has ordered that all packages exported from premises registered under the Act as a central creamery shall be described as " Northern Ireland Creamery Butter," while butter exported from premises registered as a butter factory must bear the words " Northern Ireland Factory Butter."

Butter exported from Northern Ireland is normally consigned direct from creameries to wholesalers in Great Britain without the intervention of a wholesaler or shipping agent in Northern Ireland. In the opinion of the Ministry it is extremely desirable that this system of consignment direct from the creamery or factory to the wholesaler in Great Britain should continue and consequently although provision has been made in the Act for the registration of wholesale depots, this provision is designed to cover premises at which farmers' butter is collected, classified and despatched, without treatment, to markets outside Northern

Ireland. Consequently provision has only been made for the marking of butter exported from wholesale depots with the words " Northern Ireland Farm Butter " in the case of butter made in Northern Ireland otherwise than at registered premises, since it is not intended that wholesale depots will normally deal with any other class of butter than farm butter.

Every person exporting butter or cream must in future hold a licence from the Ministry. The issue of licences will not be confined to owners of registered premises and may be obtained by any producer. Consignments of butter not exceeding 28 lb. in weight may, however, be exported by producers without licence, while consignments of butter not exceeding 11 lb. in weight (the maximum weight for parcels sent by post) may be despatched outside Northern Ireland by any person.

In regard to the methods of manufacture of butter, no attempt has been made by the Ministry to draft elaborate regulations or to prescribe any uniform method. The door has thus been left open for the introduction of new and improved processes as and when these are discovered. It is, however, a condition for the registration of premises under the Act that the buildings are structurally suitable for purposes in respect of which they are registered, that they are maintained in a condition of cleanliness, that the power, machinery and equipment are adequate and that there is a sufficient water supply available. Special provision was made in the Act for ensuring that the milk supply to creameries is clean and pure and free from all risk of contamination. This is a matter which has not always been entirely satisfactory in the past, due largely to the supineness of farmers supplying milk to creameries. The powers conferred upon the Ministry in regard to the control of the milk supply are regarded as of paramount importance and it is hoped that all sections of the industry will co-operate with the Inspectors of the Ministry to ensure the strict enforcement of these important provisions of the Act. At the creamery or butter factory it is provided that all cream shall be pasteurised, while the maximum temperature of butter during the process of working must not exceed 54°F.

The success to be achieved by the Marketing of Dairy Produce Act in effecting an improvement in the reputation and quality of Northern Ireland butter will in large measure depend upon the personnel engaged in the industry. Provision has, therefore, been made for prescribing certain qualifications which should be possessed by all managers, assistant managers and butter-makers employed in creameries. In the case of existing creamery employees, the Ministry is empowered to grant them recognition as possessing the necessary qualification as prescribed by the Rules in virtue of their previous experience and existing certificates.

Although the appointed day for the operation of the Marketing of Dairy Produce Act and Rules had been fixed as the 1st January, 1931, it was represented to the Ministry that a number of creameries had in their possession stocks of butter boxes and wrappers which would take some time to dispose of. Accordingly, in order to afford an opportunity for creameries to use up existing stocks of butter boxes and wrappers and to order new supplies, the Rules in regard to the marking and packing of boxes of butter for export have been postponed for three months and will not come into operation until the 1st April, 1931.

Potatoes.—The period covered by this Report included the first complete potato shipping season in which the Marketing of Potatoes Act (Northern Ireland), 1928, was in operation, and it was generally agreed that the standard of the Northern Ireland potatoes placed on cross-Channel markets was considerably improved. It is, however, greatly to be regretted that for reasons which are referred to elsewhere in this Report, the prices realised were abnormally low. The Ministry was gratified by a request received from certain of the principal potato exporting merchants at the end of May when, normally, inspection under the Act ceases for the season, that inspection should be continued for the month of June. This request which evidences belief in the benefits accruing from the operation of the Act, was acceded to

Towards the end of the season when considerable quantities of potatoes remained unsold, a demand for potatoes for stock feeding purposes arose in the Irish Free State. To facilitate the supplying of that demand, the Ministry made an Order under Section 4 of the Act dispensing with inspection in the case of potatoes consigned to the Irish Free State for stock feeding purposes. The order, which was designed primarily to assist in the clearing of the 1929 crop, has since been revoked.

For the 1930-31 shipping season the Act will, by Rules made in September, be operative in so far as shipments to Great Britain are concerned as from the 1st October, instead of the 1st November, as was the case in the previous season. This change was considered necessary, as although the quantity of potatoes exported in October of any year is small, there is a risk that the standard of quality might be low if inspection were not compulsory and that in this way the potato trade in succeeding months might be adversely affected. Consignments to the Irish Free State will not be affected until the 1st November.

Meat.—Northern Ireland exports annually meat to the value of some 2¼ million pounds. The bulk of this trade is in pork, bacon and hams with Great Britain, although small quantities of beef and mutton are also exported. Unfortunately, the develop-

ment of this trade has been jeopardised by the fact that occasional consignments of Northern Ireland meat have been condemned by Public Health Authorities in Great Britain, and it is quite clear that steps must be taken, without delay, to ensure that all meat sent from Northern Ireland to the British market will be in satisfactory condition.

It may be mentioned that the various foreign countries which send meat to Great Britain certify officially their consignments as being satisfactory.

After consultation with the interests concerned, the Ministry drafted a Bill which was read a first time in the month of July and which passed its second and third readings and became law during the autumn parliamentary session.

Briefly, the Bill provides that no fresh pork, beef or mutton may be exported, except by licensed exporters, and unless the animal has been inspected before and after slaughter and has been killed on registered premises. It is also provided that all bacon factories must be licensed and that all pork carcases arriving at bacon factories must be inspected.

Fruit.—In recent years the Ministry has been pressed to promote legislation in connection with the marketing of Northern Ireland fruit on lines somewhat similar to those of the existing legislation relating to the marketing of eggs and potatoes. A Bill was, accordingly, drafted in consultation with representatives of the growers and traders, and received a first reading in July. Further consideration of the Bill has been postponed by Parliament until the spring session of 1931.

The Bill proposes that all exporting merchants shall be licensed and shall grade their fruit for shipment up to certain standards. Producers will be given permits, free of charge, to export fruit grown by them, but such fruit will require to be graded. Permits will also be given to export ungraded fruit to bottling, canning and similar establishments. The home trade will not be affected by the Bill except that steps will be taken to prevent the practice of " topping " and a voluntary scheme on the lines of the National Mark System in force in Great Britain will be set up.

Marketing Organisation.—In addition to the various legislative measures in connexion with the improvement in the conditions of marketing Northern Ireland agricultural produce, which have been already referred to, the Ministry has during the past two years been carrying out a general survey of the existing methods of marketing farm produce in Northern Ireland, the channels

through which produce passes from the farm to the consumer—whether through the market, the merchants' store, or other agency—and the changes which have occurred in market organisation in recent years. This enquiry is being financed by a grant from the Empire Marketing Fund. A number of specific enquiries have been carried out in regard to the methods of marketing certain commodities such as turkeys, lambs and wool, but in the main the enquiries conducted have taken the form of general surveys covering the whole marketing organisation of the province. A survey comprising every market in Northern Ireland has been carried out and the information collected in this way has been supplemented by enquiries made at merchants' stores, railway stations and other centres through which farm produce is consigned. A similar survey has also been conducted in regard to live stock fairs and supplementary information in connexion with the movement of live stock by rail has also been collected through the courtesy of the railway companies.

Market Intelligence.—The provision of reliable information regarding production, supplies, and prices of agricultural produce represents one of the principal directions in which marketing assistance can be given by the Ministry to farmers. A large proportion of the agricultural commodities produced in the six-county area are exported to Great Britain and enter into competition with produce raised by farmers in England and Wales, and Scotland, or imported from dominion and foreign countries. In such circumstances it is highly important that farmers should be placed in possession of the fullest information possible regarding markets and prices so as to be in a position to dispose of their produce to the best advantage. The small scale character upon which our agricultural production is carried on necessarily means that there is a vastly greater number of sellers of farm produce than there are buyers. The 100,000 farmers of Northern Ireland are all in greater or less degree interested in the marketing of the produce and livestock raised on their farms. The assembling of the individual lots of produce sold by this great army of producers affords employment for a large number of higglers, collectors and other middlemen of all descriptions but in the last resort the number of important buyers of farm produce—whether for export or for local sale—is relatively small in comparison with the number of sellers. It is probably an impossible ideal, under existing conditions for the small farmer to be possessed of equal information regarding the state of the market for the commodity he is selling as the large wholesale purchaser. But much can be done through the dissemination of market information to lessen the disadvantages under which the farmer labours in the sale of his produce through the smallness of his transactions, his isolation and lack of knowledge of the state of the market. The

circulation of this information is one of the functions of the Ministry and is one of growing importance on account of the decline of the country markets at which produce was sold *coram populo* and where the price was arrived at by the interaction of large numbers of buyers and sellers. To-day much of the produce of the farm is sold privately between farmer and merchant and the former has increasing need of the services of the press and of the Ministry to keep him informed regarding the trend of prices.

The basis for all market intelligence supplied by the Ministry must rest upon the agricultural statistics which show the acreage under each crop and the number of each class of livestock in the country in June of each year. In the case of crops this information is combined with estimates of the yield of each crop published in the autumn, and the total estimated production of the crops is thus arrived at. Information regarding variations in the supply as between one year and another provide a basis for marketing policy. Sometimes the data for Northern Ireland requires to be supplemented by similar data from other countries, and information of this character which is of interest to farmers is published periodically by the Ministry.

Throughout the year the usual statement of the prices and quantities of agricultural produce sold at markets in Northern Ireland during the previous week was issued each Monday evening. This statement is based upon returns regarding the prices and quantities of farm produce sold at nine of the principal markets in the six-county area, which have been carefully selected with a view not only to their importance as markets for the disposal of various classes of produce but also from the point of view of their geographical distribution throughout the province. Where possible the information obtained from these sources is supplemented by returns received from Inspectors employed by the Ministry, merchants and others. In the case of potatoes this latter information is of special importance since the prices of this commodity returned from the markets can only be taken as representative of the relatively small quantities of potatoes sold for local consumption in the six counties. Consequently, simultaneously with the weekly Produce Statement, a separate statement is also issued each week during the exporting season, giving particulars of the prices paid for the principal varieties of potatoes for export.

In the case of livestock two sets of reports are issued by the Ministry. The bulk of the livestock trade of the province is still carried on at the monthly fairs which are held at numerous centres throughout the country. Detailed reports regarding the transactions at 242 fairs, an average of 20 per month, were issued during 1929-30. In addition a weekly report is

issued each Thursday giving particulars of the prices realised for stock at the Belfast auction marts. An attempt was made during the year to inaugurate a series of reports in respect of auction sales at centres outside Belfast but the auction mart has not yet been firmly enough established in any area outside Belfast to enable reliable reports to be published regularly.

In addition to the particulars of the prices of agricultural produce and livestock referred to above information is also collected regarding the prices of farm requisites—feeding stuffs, fertilizers and seeds—and is published in the Monthly Report of the Ministry. This latter publication also contains many other features of interest to farmers, including a review of agricultural conditions during the month, indicating the progress of the crops and the condition of livestock. Notes are also published dealing with the work which should be performed on the farm during the ensuing month, advising farmers regarding the economical use of feeding stuffs, summarising the prices of livestock at fairs and the trend of the markets in the past month and giving statistics of the imports and exports of livestock and some of the principal classes of agricultural produce. In addition the report generally contains an article dealing with some branch of the agricultural industry in its economic aspect, summarising the position in regard to the demand and supply for some commodity of importance to Ulster farmers, or giving a general review of market prospects. The growing circulation of the Ministry's Monthly Report is a testimony to its usefulness to farmers. Copies of the report are issued free but only in response to a specific request to have this publication sent to a definite address, and the number of persons on the mailing list is now 1,900.

Much of the information contained in the Report and also in the other statements issued by the Ministry is reproduced in the press and is thus brought to the notice of an ever wider circle of farmers. The Ministry is greatly indebted to the Editors and proprietors of newspapers in Northern Ireland for assistance in connexion with the circulation of information of interest to farmers.

In addition to the publications of general interest such as the Monthly Report and the Weekly Produce Statement referred to above, the Ministry also publishes a considerable amount of market information dealing with special commodities. The circulation of the bulletins containing this information is normally confined to a limited group of producers or traders although in some instances the bulletins are also issued to the press.

Finally, reference may be made to the fact that during November, 1930, an arrangement was made with the Belfast Station of

the British Broadcasting Corporation to broadcast a Bulletin of Market Prices for Farmers every Monday evening. This development represents a further improvement in the existing organisation maintained by the Ministry for the distribution of market intelligence to the farming community.

General.

In the main the activities of the Ministry which have been described in the previous pages have dealt with schemes in connexion with educational, live stock and marketing improvement which affect all sections of the agricultural community. These activities and schemes are directed principally towards the progressive and gradual improvement of agriculture in Northern Ireland and in this way will ultimately redound to the benefit of all classes of farmers in the province. In face of the existing agricultural depression, however, the Ministry has realised the need for the provision of direct assistance to farmers who require credit facilities to enable them to develop their business. A considerable number of different loan schemes are in operation under which financial assistance can be obtained by farmers. The operations during 1929-30 under each of these various schemes are dealt with in Appendix IV.

Another aspect of the Ministry's activities to which I wish to direct special attention is the acquisition of land for afforestation. During the year covered by this Report a substantial increase was made in the area of land available for planting. An additional 2,681 acres were acquired and the total area under the control of the Ministry for afforestation is now 14,819 acres. The total area planted during the season was 969 acres, as compared with 784 acres in the previous season. In acquiring lands for afforestation the Ministry aims at establishing a few relatively large areas of forest land which can be managed economically and which can afford employment to large numbers of men for extended periods. In consequence the Ministry has declined to take over small areas of land which although otherwise suitable for afforestation could not be managed on an economic basis. To meet the requirements of owners of land of this character, however, a scheme is in operation whereby grants are given to persons who undertake to plant trees on a commercial scale on their holdings.

In conclusion I wish to refer to the loss which was sustained by the Ministry through the retirement of Mr. James Vincent Coyle, C.B.E., B.L., Assistant Secretary to the Ministry, in January, 1930. Mr. Coyle had been associated with the work of agricultural development in Ireland for a period of nearly thirty years—first with the Department of Agriculture and Technical

Instruction for Ireland, and latterly with this Ministry. His great administrative experience and knowledge of the running of Government departments was invaluable in the establishment and organisation of a new department entrusted with the administration of agricultural services in Northern Ireland. The Ministry also experienced a great loss through the untimely death of Mr. George Wilson, M.R.C.V.S., D.V.S.M., Head of the Dairy Bacteriology Division of the Ministry. Mr. Wilson had been responsible for the initiation and development of the movement for the production of Grade A. Tuberculin Tested milk in Northern Ireland. The rapid increase in the output of this class of milk during the past few years was a testimony to Mr. Wilson's work and ability.

I have the honour to be,

Your Grace's faithful servant,

E. M. ARCHDALE,
Minister.

JAMES S. GORDON,
Secretary.

Ministry of Agriculture,
Wellington Place,
Belfast.

6th May, 1931.

APPENDIX I.

REPORTS ON THE WORK OF THE RESEARCH DIVISIONS OF THE MINISTRY.

APPENDIX I.

CHEMICAL AND ANIMAL NUTRITION DIVISION.

The increased facilities available at the farm of the Agricultural Research Institute at Hillsborough have enabled the division to extend its field work very considerably and to carry out certain types of nutrition experiments which demand very accurate control.

POULTRY.

The division has continued to control the nutrition work which is being carried out at the Poultry Research Station at Hillsborough under the Empire Marketing Board Scheme, and during the year results of considerable practical interest have been obtained.

CHICKEN REARING.

For various reasons, such as disease or inclement weather it is sometimes necessary to rear chickens indoors for the first few weeks of their lives. In order to obtain information as to the most suitable feeding and management under these conditions an experiment involving five groups of chicks was commenced early in the year. Briefly the results were as follows :—Chicks fed on a cereal mash containing two per cent. of cod liver oil with separated milk to drink and oyster shell *ad lib.* were reared satisfactorily indoors behind ordinary glass. On the other hand, chickens reared under exactly similar conditions, but without the addition of cod liver oil practically all died as the result of rickets. In a third group the conditions were the same as those for the second group, with the exception that the glass in the windows was substituted by a glass transparent to ultra-violet light. This did not prevent the onset of rickets but the attack was not so severe as that in the corresponding group behind ordinary glass. It is worthy of note that during the early stages of the experiment the weather was extremely dull and that under better conditions of solar radiation the third group might have given more satisfactory results. This experiment demonstrates that where circumstances demand, it is quite feasible to rear chicks within doors provided that approximately two per cent. of good class medicinal cod liver oil is added to the mash.

In another experiment chicks reared on a ration in which the grain and mash were mixed together and fed from a dry mash hopper gave equally good results as another group of chicks to which the mash and grain were fed separately. The former system is the more economical, since it involves no loss of grain in the litter, curtails the labour and permits of more accurate control of the ration.

Perhaps the most interesting results obtained this year were from an experiment designed to obtain information as to the relative importance of the various ingredients of the mineral mixture which has been used in the experimental work during the past three years. This mixture is made up of steamed bone flour, common salt, muriate of potash together with small quantities of iron oxide, sulphur and potassium iodide. The results showed quite definitely that the proportion of steamed bone flour was unnecessarily high and that a fraction of the amount fed hitherto was ample under the conditions of the experiment. The omission of the common salt and muriate of potash from the mixture was attended with very serious results. Chicks fed on a ration to which the mineral mixture without the chlorides had been added made very poor liveweight gains and exhibited signs of cannibalism. The mortality in this group was very high and it was observed that the birds showed a depraved appetite by eating feathers, pieces of wire, small nails, etc. The food consumption on the basis of pounds of food per pound of liveweight increase was almost double that of any other group in the experiment. The omission of the iron oxide, sulphur and potassium iodide appeared to have no effect on the rate of liveweight increase. It should be mentioned that in the above experiment oyster shell was fed *ad lib.* to all groups.

An experiment demonstrating the advantage of separated milk for the rearing of

chicks and the use of a mash containing extracted soya bean meal and a mineral mixture as a substitute where separated milk is not available was reported last year. This experiment was repeated this year and similar results obtained. Confirmation of results was also obtained in the experiment quoted last year where surplus cockerels fattened off grass runs made just as satisfactory liveweight gains as those fattened intensively on the battery system.

LAYING EXPERIMENTS.

As was pointed out in last year's report the pullets which were reared in the 1928 growth experiment were placed in laying pens and all fed on the same laying mash. The complete figures for the two years' egg yield are not yet to hand, but there is every indication that the best reared birds have laid the most eggs. On the other hand, the birds reared on a cereal mash only have led as regards egg size, while the pullets reared on a cereal mash plus four per cent. of a mineral mixture have made a very good performance considering the low protein content of their rearing mash.

Egg yields for the first year of production are available from an experiment set up to explore the possibility of including a high proportion of ground oats in the laying mash. So far the results have been a little disappointing and it appears that the high fibre content caused by the introduction of large quantities of oats has had a slightly depressing effect on egg yield. The experiment will be continued for a further year.

Early in the year a preliminary investigation of the rate of storage of calcium and phosphorus by mature pullets prior to and at commencement of laying was carried out in the laboratory. This work is being repeated at the present moment to confirm and amplify the results already gained, and it is hoped that the information so obtained will be of material assistance and will link up with the nutrition work in progress at the Poultry Research Station at Hillsborough.

BABY BEEF.

Two experiments on the feeding of baby beef have been carried out during the year. The first was concerned with the control of the bulk of the ration. Two groups of baby beef calves were fed on rations which were similar apart from the fact that the ration for one group contained a higher proportion of dry matter than that of the other group. There was no significant difference between the liveweight gains made by the two groups, but it should be borne in mind that the differences in dry matter content were not excessive. These results confirmed the findings of a previous experiment and indicate that better fattening results are not likely to be secured through lowering the existing dry-matter standards by the substitution of extra cake and meal for a portion of the fodder.

In the second experiment two groups of calves were fed for baby beef, the first group receiving a ration containing a high proportion of home-grown foods and the second group receiving a ration containing a considerable amount of purchased cakes with a consequent increase in the protein content. No significant difference was found in the rates of growth of the two groups. The results confirm those of a similar experiment conducted last year, and demonstrate that a much larger proportion of home-grown foods can be used successfully in the fattening of baby beef than has hitherto been practised.

SHEEP.

Four experiments with the feeding of mineral cubes to hill sheep were carried out last year and the results continue to be very promising. Farmers conducting the experiments are agreed that ewes fed with the mineral cubes produce sturdier and healthier lambs than those receiving no mineral supplements. It is proposed to continue these experiments during the ensuing season.

PIGS.

The work on pig nutrition, and more especially on the factors affecting the quality of bacon, has reached the stage which demands very carefully controlled experiments. Facilities for such work are not available at the moment, but it is hoped to continue this work at the earliest opportunity.

MILK TESTING.

The analytical work in connection with the Milk Recording Scheme of the Ministry

has been maintained, and during the year nearly 19,000 reports of butter-fat tests have been issued to farmers participating in the scheme.

The following table shows the growth of the milk recording scheme during the past seven years :—

	Number of Associations.	Number of Samples tested.
Year ended 30th September, 1924	34	44,543
" " " " 1925	42	76,936
" " " " 1926	53	108,448
" " " " 1927	60	127,690
" " " " 1928	66	125,879
" " " " 1929	70	146,993
" " " " 1930	73	146,247

The officers in this department have continued the investigation of the factors influencing the variations in the composition of milk referred to in last year's annual report. The experimental side of the work, namely, the sampling and analysis of samples of milk from individual cows in the dairy herd at the Agricultural Research Institute, Hillsborough, and the collection of data, has been completed. These data are now being analysed and the first factor to be dealt with is the effect of temperature on the butter-fat test. While this work involves the use of highly technical statistical methods the results of the investigation will be interpreted in a practical manner.

EFFECT OF SIRE ON MILK YIELDS OF PROGENY.

A statistical investigation of the effect of Registered Dairy Bulls on the milk yields of Registered Dairy Cows has been undertaken with a view of providing reliable information on this important point. It is proposed to make this investigation continuous and to bring it up to date in order that information relating to sires still in use may be available at the earliest possible moment and prepotent sires identified and retained. Preliminary results will be published at an early date.

SOILS AND FERTILIZERS.

Progress in experimental work connected with soils and fertilizers is necessarily slow and all experiments require frequent repetition before confidence can be placed in the results. As has already been reported an investigation on the liming problem in Northern Ireland is in progress and trials have been laid down at nine experimental centres. Careful records of crop weights and the mineral composition of the crops are being made, but the experiment must continue for several years before definite deductions can be made. Reference was made in last year's report to an experiment in progress which was designed in an attempt to determine the optimum proportions of nitrogen, phosphates and potash in manurial dressings for potatoes. The results confirmed those obtained in a similar experiment in 1928 where it was found that no advantage rested in increasing the proportion of either nitrogen or potash above those recommended by the Ministry for manurial dressings for potatoes. A further experiment on the same lines was conducted this year and the results, although not yet examined statistically, appear to bear out the findings of the previous experiments.

Complaints have been received that the quality of potatoes has deteriorated and furthermore that many potatoes turn black during the process of cooking. It is alleged that this state of affairs is caused by the excessive use of artificial fertilizers. In order to explore the possible causes of this fault in quality officers of this division are co-operating with other members of the Ministry's staff in conducting a series of trials at a number of centres in which various varieties of potatoes have been treated with different mixtures of artificial fertilizers. The cooking qualities, under controlled conditions, of samples of potatoes from each plot are being ascertained. The nitrogen content of the potatoes is also under investigation as it has been suggested

that there may be some correlation between quality, on the one hand, and nitrogen content on the other.

ANALYTICAL WORK.

The routine analytical work in connection with butter samples from the Ministry's Surprise Butter Inspections and samples in connection with the Fertilizers and Feeding Stuffs Act has been carried out.

The advisory work of the division has increased, particularly in respect of farmers' feeding problems, and a large number of miscellaneous samples have been examined during the year.

TEACHING.

The normal programme of teaching in the Department of Agricultural Chemistry of the Queen's University, Belfast, has been carried out by the staff of the division.

PUBLICATIONS.

"The Changes with Age of the Hydrogen Ion Concentration of Egg White and Egg Yolk and of the Refractive Index of the Egg White."
By J. C. Baird and J. H. Prentice. The Analyst, Jan., 1930.

"The Nutrition of the Chick and its Effect on Growth, Maturity, Egg Production and Mortality."

By J. H. Prentice, R. G. Baskett, and G. Scott Robertson. World's Poultry Congress, 1930.

SEED TESTING AND PLANT DISEASE DIVISION.

It is gratifying to report that the farming community of Northern Ireland is clearly becoming more alive to the value of the advisory services and of the practical economic bearing of the research work undertaken by the division. That the general apprehension of the value of such services should be somewhat slow is inevitable, but to-day there is not only the encouragement of regularly increasing demands upon the services of the staff but an expanding volume of expressed thanks from users and, most satisfactory of all, clearly visible concrete evidence that the results of research are being incorporated in the practical agriculture of the Province. Obvious examples are furnished by the better seeds mixtures being employed and the profitable measures of disease control being adopted. There are numerous others.

Contact and co-operation with other research centres in Great Britain and abroad has been maintained and more experiments are being carried out in collaboration with them than in previous years. Such collaboration is regarded as very valuable since it not only keeps Northern Ireland officers in touch with other workers' results in a way literature could not do, and thus brings foreign experience to the help of our own farmers, but it materially reduces the time and expense involved in replicated and repeated field trials since they can, by combination, be manifolded in a single year, under a much wider variety of conditions than would be possible at home.

Seed Testing.

A steady increase in the number of samples submitted for testing continues, the total during the past season being 3,280, made up as follows :—

From wholesale and retail merchants	.. .. ..	76 per cent.
„ farmers and co-operative societies	.. .. ..	9 „ „
„ Ministry's official samplers	.. ..	7 „ „
„ officers of public departments	.. ..	8 „ „

It is to be noted that while the proportion nominally received from farmers shows no increase over last season's figure, the number of farmers actually served has expanded largely since several co-operative societies with an aggregate membership of some thousands, made use of the station for the first time. This cheap and profitable form of co-operation is very desirable and was fostered during the early part of the year by the delivery of a number of talks to branches of the Farmers' Union. It was noted later that these bore immediate fruit in the form of co-operative purchase samples, and, to the reports upon these, advisory notes and opinions were appended as a guide to the purchasing officer of the branch. Cases occurred in which very material sums of money were represented by differences in the value of sets of samples offered to branches by vendors. Special propaganda was undertaken against the too common practice of sowing uncleaned home-grown rye-grasses and dogstail,

A feature was made of this point at the Royal Ulster Agricultural Society's Spring Show at Balmoral.

From the point of view of the seed analyst and that of the merchant, the past season was the most difficult in the decade. Grass seeds have behaved in a most irregular manner and it has been more than usually difficult to judge the value of a sample. In view of this it is not unexpected but is satisfactory to note that a larger number of farmers than heretofore used tested samples bought under advice. Nor is it surprising that Table I, which presents an analysis of the kinds of samples tested, shows such a high proportion (an increased proportion) of ryegrasses, in view of the importance of ryegrasses to the farmers of Northern Ireland.

TABLE I.

Analysis of samples tested.

Kind of Seed.	Percentage of Total.	Per cent. increase (+) or decrease (—) in comparison with previous year.
Ryegrass	76	+ 17.1
Other grasses	7	— 1.6
Flax	5	— 51.3
Clovers	7	— 9.4
Cereals	1	— 11.4
Roots, vegetables, etc. ..	4	+ 38.1
	100	

The averaged results of the season's purity and germination tests for the more important species are presented in Table II, together with corresponding figures for previous years. As heretofore modal figures are included in cases where the number of samples justifies this useful form of presentation.

TABLE II.

Purity and Germination results from the more Important Species for season 1929-30.

Species.	No. in Average	Purity.		Injurious Weeds No. of samples containing :—		No. of samples containing Ergot	Germination		Average Hard seed %	Average of mode for seasons 1923–29
		Mode	Average %	Over 1%.	Over 2%		Mode % 1929–1930	Average %		
Perennial Ryegrass .	1,275	99.0	95.3	160	122	99	82	79	—	85.0
Italian Ryegrass .	498	99.0	95.8	137	81	21	85	83	—	82.0
Mixed Ryegrass .	148	99.0	95.6	33	28	13	78	79	—	81.5
Crested Dogstail ..	80	—	95.7	4	2	14	92	89	—	—
Red Clover .	68	—	96.2	—	—	2	—	86	4	—
White Clover	22	—	95.1	1	—	—	—	88	7	—
Wild Wt. Clo.	54	—	97.3	—	—	3	—	86	9	—
Alsike Clover	43	—	95.9	3	3	4	—	88	7	—
Flax	130	—	97.8	—	—	—	94	93	—	89.5
Timothy ..	24	—	98.8	—	—	6	—	90	—	—
Cocksfoot ..	38	—	91.0	—	1	1	—	89	—	—

NOTE.—The "modal" figure is that which occurs most frequently in a series. Thus in Table II, perennial ryegrass shows a germination of 82 per cent. more frequently than any other figure. The "mode" thus reflects the general quality of seed obtainable more accurately than does the "average."

The purity and germination figures in the table refer to tests conducted on the "continental" system. Only some 200 requests for "Irish" tests were received. This indicates in a general way the preponderance of merchants' samples, and it is to be observed that the general practice among merchants of submitting their stocks to official tests is of the greatest benefit to the consumer since the testing of a hundred stocks for merchants is equivalent to checking thousands of purchase samples for farmers. It will be seen that apart from the ryegrasses the general quality of seed on the market was good. Flax was particularly good—a very marked improvement on the previous season's produce. The disappointing quality of ryegrass, after a promising spell of good weather during the harvest year, was probably referable to the effect of late frosts which occurred about the time ryegrasses were in flower. A few parcels were found to improve under storage. The majority tended to fall, some very sharply, in germination. Official check tests were made upon 240 samples drawn from vendors by the Ministry's inspectors. These showed a satisfactory general quality.

RESEARCH AND ADVISORY SERVICE.—These may conveniently be dealt with together since the purpose of the former is to improve and extend the latter, so that research is only undertaken upon problems of immediate practical import to the agriculture of the Province. Enquiries were received during the year upon a great diversity of subjects, but the large majority refer to weed eradication, and seeds or seeds mixtures. During the year under review rather more requests for information upon crops new to this country were received—probably a good sign as indicating a quickening outlook and improving tendency to up-to-date farming.

Weeds.—An attempt is being made to investigate thoroughly the requirements for eradication of the chief weed pests of Northern Ireland individually, one species being undertaken at a time. There are some half-dozen weeds of outstanding importance by reason of their profusion and vigour under our climatic conditions. Of these the thistle has been first dealt with and results of the greatest practical importance have been recorded. The commonest and worst thistle of our farms is the perennial creeping species which infests both grass and arable land—a peculiar nuisance since breaking up the one, or laying down the other—a final resort in handling bad cases of many other British weeds—is ineffective. The perennial creeping roots of the plant penetrate too deeply into the soil for cultivation to destroy them and hitherto complete eradication has been practically unknown. Chemical methods of treatment have, therefore, been explored and a remarkable degree of success has attended the use of chlorate of soda. Experiments have been laid out to determine the best time at which to apply the chemical and the best quantity to use. From these it appears that the best results are obtained by sowing the chlorate in the autumn on unploughed stubble at a rate of from 200 lb. to 300 lb. per statute acre. In one experiment, carried out upon land put at the disposal of the division by the trustees of the Agricultural Research Institute at Hillsborough, in an area upon which thistles were growing to the number of over 50 per square yard, the chlorate was sown late in autumn at a rate of 300 lb. per acre. The ground was cropped next spring in part with oats and in part with potatoes, while a third portion was left fallow. Upon examination in the following June it was found that none of the original thistles whatever were living even on the check plot where no competing crop had been sown, while the oats and potatoes grown on the treated land were perfectly normal and showed no effect at all from the chemical.

Here, therefore, is a treatment which at the reasonable cost of about £3 per acre has given complete control of one of the worst pests of arable land. Experiments are being continued upon the treatment of other weeds with the same chemical and it may be mentioned that already a considerable measure of success has been attained in the destruction of docks and nettles in several districts in Northern Ireland.

With thistles in grassland the problem is a different one. Poisons in the ordinary sense and cultivation are out of the question and the only alternative is periodical destruction of the above-ground parts of the plants. An investigation was therefore undertaken to determine the best time and the most economical number of times for cutting. It is widely believed that a cutting at or about flowering time is the most valuable. Trials made during 1929 and 1930 demonstrate the falsity of this and show that earliness of the first cutting is an all-important factor. Plots were laid down on badly infested pasture land, arranged to test the effect of one, two, three and four monthly cuttings respectively, when the first cutting was early in the season, and

when the first cutting was delayed. All thistles were closely cut with the point of a scythe on arranged dates. In the following year careful counts were made of numbers of thistles remaining on each plot at midsummer and estimates of their average size. Briefly, the result was that even in one season, thistle herbage was reduced in the proportion of 40 to 3 by two cuttings, the first being made in June when the plants were four to six inches high, while three cuttings failed if the first was delayed until July. Satisfactory methods have thus been demonstrated for the destruction of creeping thistles under both arable and pasture conditions. A detailed account of these experiments will be published in Volume III of the Journal of the Ministry.

County Experiments.—Farm scale trials have been continued in collaboration with the Itinerant Instructors in Agriculture and with the Agricultural Research Station at Hillsborough in connection with seeds mixtures, varieties of red and white clovers, indigenous strains of grasses, and grass-seed harvesting practice. Special attention has been paid to the optimum date for harvesting ryegrass seed.

Seed Production.—A new method for the determination of purity to type in ryegrass seed by the use of ultra-violet light has been developed and particularly encouraging results have attended experiments so far made. These are being pursued vigorously since trueness of strain is to-day so highly important a factor in the sale of seed as well as in the production of hay and pasture, and since the production of grass-seed for export is so prominent an industry in the Province. Everywhere in buying countries a cry is arising for guarantees of genuineness to type and there is every reason to hope that the experiments now in progress will enable Northern Ireland seed to lead the way in carrying this guarantee.

PROFESSIONAL ASSOCIATIONS.—The station has continued to participate in the work of the International Seed Testing Association. The results of tests upon referee samples circulated by the association were very satisfactory. The Head of the division attended the annual meeting of the British Seed Analysts conference and read a paper upon the employment of ultra-violet light in seed testing, and served upon a technical advisory committee of the Ministry of Agriculture and Fisheries.

TEACHING.—All senior officers of the division have carried out duty as teachers in the Department of Agricultural Botany in the Queen's University of Belfast.

Extra mural lectures have been delivered to Seed Trade Associations and to Farmers' Union Branches.

Plant Diseases.

Advisory Work.

During 1929-1930 the number of specimens of diseased plants submitted for advice has been nearly treble that recorded for 1922-23 and at the same time shows a considerable increase on the figure for 1929. In order to indicate the increase which has occurred since this service came into operation the following figures show the number of recorded cases dealt with annually from 1923-1930, inclusive :—65, 73, 94, 91, 116, 96, 140, 175. Only occasionally have specimens attacked by the commoner and better known diseases been received and it is again emphasised that on account of the more obscure nature of the problems investigated a considerable portion of the available time has been occupied with this side of the work. To some extent this may be taken to indicate that farmers and members of the county staffs are better versed in their knowledge of the commoner diseases, with the result that this type of enquiry which was prevalent is now so little in evidence. The specimens received embrace all agricultural and horticultural crops, including potatoes, cereals, flax, fruit, vegetables, forest trees and decorative plants.

For the advice of those who are not already familiar with the facilities which are offered, it may be stated that the examination of any diseased plant specimen, which may be submitted is carried out free of charge, and that a full report is sent to the enquirer giving as clearly as possible the cause of the trouble and the most suitable methods to be used in order to bring about its control. Specimens submitted should be packed carefully so that they will arrive at the laboratory in as fresh and natural a condition as possible. Damp moss provides an excellent packing material, The reception of specimens in such a condition facilitates and hastens the reply. The inclusion of a few leaves between a folded sheet of notepaper enclosed in an enve-

lope is a habit to be avoided, and the fuller the stated particulars sent with the specimen the more satisfactory is the report likely to be.

Research.

POTATO DISEASES.

Ordinary or Late Blight (*Phytophthora infestans de Bary*).

Further work has been carried out in connection with the study of this disease, field facilities being offered by the Agricultural Research Institute, Hillsborough, Co. Down. Besides laboratory and field investigations into the susceptibility of varieties more lately introduced, another set of experiments has been conducted with a view to further comparison between the value of dusting the crop with a fungicidal powder and spraying the crop with a recognised mixture (bluestone and washing soda). Blight was very severe during the season, its first appearance in the plots being noted on July 29th, and the conditions which prevailed during late summer provided a severe test for the fungicides under trial. Results which had been obtained previously (Journ. Min. Agric. N.I. Vol. II, 1929) were again confirmed and in no case did the dusting of the crop prove so satisfactory as spraying. A full report of this work is being prepared for publication in Vol. III of the Ministry's Journal.

In the case of a number of epidemic diseases it is necessary for the farmer to take regular precautions against the damage they may cause and this necessity provides ample opportunity for the marketing of proprietary fungicides many of which fall far below their advertised value or are only suitable for use under certain climatic conditions. In order to be in a position to give advice with regard to the use of such materials their worth must be thoroughly tested, and the unnecessary exploitation of the farmer has often been avoided by being able to give sound advice backed by the actual results which have been obtained.

Pink Rot (*Phytophthora erythroseptica Pethybridge and Murphy*).

Field trials in connection with this disease have been carried out during the year on a farm in County Antrim where severe outbreaks occurred during past seasons. At present these experiments are not complete but it is hoped that results of value to the farmer will be obtained from them. Work has proceeded in the laboratory and a paper is being written dealing with the disease. Satisfactory results were obtained from the survey carried out in 1929 to ascertain the extent to which " Pink Rot " occurs throughout the country and another survey for 1930 is in progress.

FLAX DISEASES.

Seedling Blight (*Colletotrichum linicolum* Pethybridge and Lafferty)
and
Browning (*Polyspora lini* Lafferty).

Field experiments have been carried out to determine the value of seed disinfection in controlling these two common seed-borne diseases of flax. Facilities for this work were provided by the Agricultural Research Institute, Hillsborough, Co. Down.

OAT DISEASES.

Oat Smuts (*Ustilago avenae* (Pers.) Jens. and *Ustilago Kolleri* Wille).

Following up the interesting results obtained during 1929 with regard to the disinfection of oat seed for the prevention of smuts and other seed-borne diseases, further experiments have been carried out during 1930. The most promising fungicides used in 1929 were organic mercury compounds and formaldehyde and it is to these materials that most attention has been given. Not only has complete control of oat smuts been obtained by the use of organic mercury compounds or formaldehyde, but in the case of the former treatment a significant increase in yield has resulted. This increase in yield has now been obtained from an experiment carried out on a farm scale, where the size of each of the experimental plots was one statute acre.

Leaf Spot (*Helminthosporium avenae* (Bri. and Cav Eid).

Further work on this disease and the fungus which causes it has been carried out in the laboratory and it is expected that a short account will be available during the coming year.

For the time being work on this problem has been stopped.

FRUIT DISEASES.

American Gooseberry Mildew (*Sphaerotheca mors-uvae* (Schw Berk).

No further work has been done with regard to the control of American gooseberry mildew, but a full account of the experiments carried out from 1927-29 has been

prepared and is in the press. It is now considered that the pursuit of this problem has been brought to a successful issue. In 1922, before this work was commenced no satisfactory means for the control of American gooseberry mildew in Ireland was known, the only remedy being to burn infected bushes. As a result of this bush burning policy the cultivation of gooseberries was passing through an acute crisis—the cure was as bad, if not worse, than the disease—and the planting of gooseberry bushes in any quantity had almost ceased. After seven years' work it has been fully demonstrated that the disease may be controlled by summer spraying, that the control measures are within the reach of every grower, and that the cost of carrying them out is small compared with the present market value of the crop. That the results of this investigation have been accepted by the farming community is evident by the general adoption of the recommended treatment throughout the country. A complete account of the first part of the work will be found in Vol. I of the Ministry's Journal while full information regarding the control measures recommended is given in Ministry's Leaflet No. 49.

Apple Scab (*Venturia inaequalis* Aderh).

In 1923 the plight of the apple orchards in Northern Ireland was a very sorry one and it was only necessary to visit the apple growing districts of County Armagh in order to observe the unhealthy condition of the trees. Years ago the cultivation of apples had been a profitable undertaking and it was clear that here was a problem which needed immediate attention. Some 4,000 acres of orchards in County Armagh alone, mostly in their prime, were rendered largely unproductive. It was about this time that the now well-known tar distillate washes were introduced for winter spraying and although the trees were clean and almost free from the Apple Sucker and Apple Greenfly in orchards where winter spraying had been used, yet the quantity and quality of the crops remained poor. The disease mainly responsible for the poor quality of the fruit was Apple Scab and it was decided to carry out a comprehensive series of experiments in commercial orchards in order to determine the most satisfactory methods for bringing about its control. It may be stated here that no such series of experiments could have been undertaken, nor would the results obtained have been applied so readily had it not been for the vigorous co-operation given by the Ministry's Inspectors in Horticulture and the County Instructors in Horticulture. Within two years after the commencement of this work results of a striking nature were obtained. As a result of systematic and thorough spraying with Bordeaux mixture, trees which had been bearing a few pounds of unsaleable "scabby" fruit were being nursed back to vigorous health. They made better growth, produced abundant healthy foliage, and carried from six to ten times the crop borne by the unsprayed trees included in the same experimental plot. The quality of the fruit was also vastly improved. After these results had been confirmed for two or more seasons every effort was made to drive the value of summer spraying home to the grower and now this operation is rapidly becoming part of the accepted routine in apple culture. As an indication of the progress which has been made, six spraying machines, operated by motor power were purchased by growers and approximately 130 manual machines were sold for use in orchards during 1930. In the two orchards where this research has been steadily carried out since 1924, good crops of clean fruit have been obtained every year from sprayed trees from 1925-1930, with the exception of 1926, when the blossom was killed by May frosts. A full account of the work which was carried out up to the end of 1927 will be found in Vol. II of the Ministry's Journal, while full particulars regarding the spraying programme recommended are given in Ministry's Leaflet No. 33.

The whole of the experimental work which has been carried out during the past eight years has been conducted in commercial orchards and results far exceeding expectations have been obtained. There is, however, a limit to the type and scope of the work which can be carried out under these conditions and this limit has been almost reached. The work which has been done has not only shown how the results of modern research may be applied and put to successful and profitable use by the farmer, but it has indicated the possibilities of further research and has opened up an avenue of problems which could undoubtedly be tackled with success were better facilities afforded.

WINTER SPRAYING.

Further attention has been given to the local manufacture of tar distillate washes for winter spraying. Of the series tested in 1929, a wash which gave results equal to those obtained by the use of the best washes purchasable has been prepared and marketed by a Belfast firm during 1930.

FOREST TREE DISEASES.

The control of diseases and weeds in the forest nursery.

It is hoped that a complete account of the work carried out up to the end of 1929 will be published in Vol. III of the Ministry's Journal A new series of experiments has been commenced during 1930 in order to compare the results obtained by the use of sulphuric acid with those given by aluminium sulphate. This latter fungicide has been advocated by workers in the United States and if it gives results comparable with those obtained by using sulphuric acid then certain advantages would accrue from its use.

Demonstrations.

In co-operation with the Horticultural Inspectors of the Ministry and the County Instructors in horticulture, further public demonstrations were arranged towards the end of 1929 in the orchards where experiments are in progress. These demonstrations were very satisfactorily attended and proved to be a valuable asset to propaganda work. An exhibit illustrating the work done in connection with the control of fruit diseases was staged at the Chrysanthemum Show of the Ulster Horticultural Society in the autumn of 1929. The work in progress dealing with plant disease investigation in general was illustrated by an exhibit at the Annual Conversazione of the Belfast Naturalists Field Club in October, 1930.

Publications.

Recent advances in Agricultural Biology—(1) Anatomy and Physiology ; (2) New Crops other than cereals.—S. P. Mercer. *Agricultural Progress* XIII, 1930

Experiments upon the value of filtered ultra-violet light for diagnosis of *Lolium* species—S. P. Mercer and P. A. Linehan. *Seed Analysts Bulletin,* September, 1930.

PLANT BREEDING DIVISION.

This season reproduced almost exactly the splendid sowing conditions and wretched harvest weather of the preceding year. Such adverse conditions impose a great handicap on the progress of the work in all its aspects but particularly on small-scale operations as regards both propagation and testing.

OATS :

The results from the 1929 county variety trials in which two new varieties of hybrid origin were included for the first time became available early in 1930. The process of selection which preceded the appearance of these strains in county variety trials had been directed along very definite lines. One strain, Black Potato x Victory, possesses a very stiff, erect straw and a small, dense ear and is intended for such land as usually produces laid crops with their attendant loss and increased harvesting difficulties. It was believed that Black Potato x Victory would prove to be particularly well adapted for such conditions, and the 1929 trial results appear to have justified the belief. A rather unexpected feature of the results was that the variety was found to be capable of giving extraordinarily heavy yields and did in fact outyield the various other varieties in twelve out of eighteen trials and ranked lower than third in two trials only. The straw yields returned were even more remarkable.

It is probable that seasonal conditions in 1929 were particularly suitable for this variety, but even when this is assumed to be so and allowed to discount the rather remarkable results, the variety would still appear to hold sufficient promise to warrant its propagation and dissemination. Accordingly arrangements have been made whereby seed of this strain will be available to farmers in limited quantities in the spring of 1932, by which time the results of two further seasons' trials will be known and will serve as a guide to the districts most likely to benefit by its introduction.

This selection emanates from a hybridisation made by Dr. Hunter, formerly in charge of this Division, and now assisting Professor Sir R. H. Biffen, F.R.S., at the Cambridge Plant Breeding Station. Originally, a cross was made, between Potato and Black Tartary, from the progeny of which a short, erect, black-grained type was isolated and named Black Potato. The grain of Black Potato was considered to be rather small and in order to obtain a larger-grained type the selection was crossed

with Victory. From the progeny of this cross seven years of selection have isolated four strains of which that included in the 1928 tests is one. All of these selections are of the same general type, characterised by very stiff straw, but show minor differences in respect of earliness, yield, etc. It has not yet been decided finally which type will be ultimately propagated to bulk but the probability is that the one eventually chosen will be slightly better than the present representative of the cross in the variety trials. The strain selected for propagation will be known in future as " Stormont Arrow."

The other new strain tested did not produce good yields in 1928, but its inclusion in the trials was not based upon any such expectation. This selection, from the cross Supreme-Victory, is a very early-ripening oat of the Victory type and is primarily intended for localities which by their geographical situation enforce very late sowing and harvesting, but in which cultural conditions are otherwise good.

Few trials are placed in such localities as normally there is always a danger of the crop being lost by ripening too late for favourable harvesting weather and consequently the new oat, ripening nearly a fortnight before the other varieties comprising the trials, held in more normal conditions, suffered severely from the depredations of birds and was also usually over-ripe when cut. In the circumstances it is not surprising that low yields were recorded from it.

In point of fact this selection is relatively a very high yielder and, at Stormont, far ahead of " Stormont Arrow " in this respect. Ordinary county trials can give little or no guidance as to its merits in the conditions for which it is intended and in all probability the variety is worth while retaining and propagating, to a limited extent at least.

In the spring of 1930 some 55 cwt. pure seed of eleven varieties of oats was supplied by the Division for use in county variety trials of which two sets are run concurrently, one with a number of varieties suitable for good cultural conditions, and the other with varieties more likely to succeed in high-lying districts and poorer cultural conditions generally. A further quantity of about 155 cwt. of pure seed of eight varieties was supplied to selected farmers who undertook to maintain purity and supply such of their neighbours as desired seed the following season. Similar small stocks of the more useful varieties are distributed each year, the system thus making the Division a continuous source of pure stocks of seed.

The varieties distributed in this way in 1930 included the Stormont selected pure strains of Potato, Sandy and Tyrone Tawny, the first two of which are believed superior from the Northern Ireland grower's point of view to any other strains of these varieties. Tyrone Tawny is purely a local oat of very great value indeed on mountain farms. The grower's difficulty in this case has always been to obtain a seed stock of this variety free from " greys " or wild oats. The Stormont stock is, of course, pure in a much more exacting sense than this and is accordingly much sought after. The urgent need for the propagation to bulk of a " grey "-free stock did not permit of adequate tests preceding the selection of the strain to be propagated and it is not surprising to find that the present strain of Tyrone Tawny is not so good as some of the more recent selections which will in due course supersede it.

All of the seed thus distributed in 1930 was grown at the North-West Agricultural School, Strabane, where the final stages of propagation are carried out each season. At Strabane in 1930 twelve varieties underwent bulking for distribution in 1931. These include a Stormont selection of Poland which will be tested out in 1931.

Propagation plots at Stormont numbered fifteen large and twenty-four small and included a good many new selections of hybrid origin. A small-scale test at Stormont included 66 varieties of which nearly 40 are new selections in process of comparison with the remainder which are standard varieties.

FLAX :

The small-scale variety trials conducted each season at Stormont continue to furnish much useful information as to the relative merits of the new pure lines under trial. The data from this preliminary test are of material assistance when a choice has to be made of the varieties to be included in the large-scale county trials. The results of these in turn determine which of the new varieties are most worthy of propagation to bulk.

The early stages of propagation at Stormont in 1930 included 90 small and 20 large plots. Adverse weather did not affect flax work nearly so much as that on oats.

For the third successive season the later stages of propagation have been transferred to Essex and in spite of abnormally bad weather conditions for the district, there is every reason to expect successful results.

The previous year's working was very successful and the rate of increase recorded averaged about 13 times even in the largest, half-acre, plots.

In 1930, in addition to fourteen smaller plots, the propagation scheme included nine quarter-acre, two half-acre, and two five-acre plots. The largest plots are expected to yield in each case at least one ton of seed of the selections M1/14 and No. 27. These are considered to be the most promising Stormont selections and have been named Stormont Gossamer and Stormont Cirrus respectively.

These ton lots are intended to initiate further propagation on a commercial scale in Canada or elsewhere and thus ultimately to create a source of seed supply to Northern Ireland of varieties particularly suitable for Northern Ireland's requirements. As often as is necessary further ton consignments of pure seed will be available to maintain the purity of the commercially-propagated stocks.

ANIMAL DISEASES DIVISION.

Bovine Sterility and Abortion.

A considerable amount of time was devoted during the year to the investigation of these diseases. It is now quite clear that while these conditions are often intimately related, they may also occur quite independently. In fact some of the worst outbreaks of barrenness have occurred in districts where there was little or no abortion disease. Most veterinary surgeons who have had experience of these epidemics are inclined to believe that the condition is infectious and that it may be transmitted by the bull. Owing to the reluctance of farmers to send the genital organs of barren cows for bacteriological examination, no progress was possible in the direction of identifying the germs responsible for the disease.

TREATMENT OF STERILITY.

While little headway has been made regarding prevention, important improvements have been effected in the curative treatment. It was found that the amount of the injection should be regulated according to the size of the animal and that particular attention should be paid to the passage and mouth of the womb. Special treatment of these parts as a supplement to the ordinary operation was introduced with good results.

An investigation of over eight hundred cases showed that, on the average, three-quarters of the treated cows subsequently proved in calf. The success obtained depends on the skill of the operator and on the degree to which the animal is affected. Once farmers realise that a cow which does not respond to two or three services is barren and requires treatment, then the results will be much better. It says much for the value of the operation that on the average it failed in only one-quarter of the cases, although many of the animals had been barren for two years and none had received more than one treatment.

BOVINE ABORTION.

In the last report it was suggested that contagious abortion in Northern Ireland might be caused by more than one kind of germ. Although no direct evidence has yet been obtained to support the suggestion, strong circumstantial evidence has been furnished by blood tests. 148 cows were tested for evidence of infection by the Vibrio of sheep abortion and of these 57 gave a reaction which was provisionally accepted as positive. It remains to be decided, however, whether the standard which has been fixed by the division for this Vibrio testing is correct. This can only be done by comparing the results of the test with those obtained in a bacteriological examination of aborted calves and membranes. Here again the division was faced with a lack of material. Only four " slipped " calves were received and from three of these the ordinary germ of abortion was recovered.

EXPERIMENTAL FARMS.

Towards the close of the year the division took over veterinary charge of three

affected herds in order to ascertain the value of different methods of control.

VALUE OF ABORTION VACCINE.

Last year all the veterinary surgeons in Ulster were invited by the Ministry to report the results they had obtained with abortion vaccines. Their replies have since been examined in detail and they indicate that veterinary opinion in Ulster is about equally divided for and against abortion vaccination. In view of this divergence of opinion the division has arranged to carry out an experiment wherein half the animals in an affected herd will be vaccinated and the remaining half left unvaccinated. The number of subsequent abortions in each lot will then be compared.

POULTRY DISEASES.

In the last annual report particulars were given of a scheme introduced by the Ministry which had as its object the establishment and maintenance of flocks free from bacillary white diarrhoea. During the year under report considerable progress was made in this direction, 48,107 blood samples from 338 farms being submitted to the blood test. This rapid development was largely due to the whole-hearted co-operation of the county poultry instructors.

THE VALUE OF B.W.D. TESTING.

In the majority of the farms included in the scheme testing has been undertaken for only one year and no conclusion can at present be drawn regarding the value of testing on these farms. Records are, however, available in the case of 112 flocks where testing has been carried out for two or more years and these clearly indicate that, where the regulations of the Ministry's scheme have been observed, a distinct reduction in the number of carrier birds has resulted. This has been specially marked in flocks which contained not more than 5 per cent. of reactors when first tested. Thus of the 27 flocks included in this category no less than 15 were found to be entirely free of reactors at the second year's tests.

The value of testing on a large scale is shewn by the results obtained in County Armagh. Although the policy of intensive testing has been pursued in this county only since 1929, a significant improvement in the incidence of bacillary white diarrhoea has resulted as compared with counties where less testing has been undertaken. Thus in 1928 one-third of all the outbreaks of the disease detected by the division in Northern Ireland occurred in County Armagh. In 1930 this county contributed less than one-seventh of the total. This improvement was effected in spite of the failure of poultry-keepers fully to realise the necessity for making purchases only from tested flocks. Once this becomes widely known the value of the scheme will become still more apparent.

VOLUNTARY BLOOD-TESTING.

That the scheme is appreciated is shewn by the large number of breeders who voluntarily undertook testing. In fact it was a matter of difficulty to cope with their demands, many of which came from farmers who had no disease in their flocks. It is satisfactory to record that no less than 103 of the 338 flocks embraced by the scheme belonged to private owners.

RETENTION OF REACTORS.

An important regulation of the scheme is that all birds which fail to pass the test must be immediately killed for table purposes. The necessity for observing this condition was not sufficiently recognised by breeders.

TRANSMISSION EXPERIMENTS WITH ADULTS.

During the year under report experiments were completed by the division on the transmission of bacillary white diarrhoea amongst adult birds. Chicks were artificially hatched and reared under conditions which precluded any possibility of infection. All the birds passed several blood tests while in isolation. When they became adult they were placed with carrier birds. Four pens comprising in all 38 birds were maintained for twenty months and were tested at intervals. Finally the birds were submitted to a detailed *post-mortem* examination. It was then found that the introduction of a carrier cockerel to a pen of healthy pullets had resulted in one of the latter contracting the disease. This is only the second time that such an occurrence has been recorded. The passage of infection was also observed from carrier females to a healthy female.

TRANSMISSION OF B.W.D. BY MALES.

It has been assumed for several years that the male bird acts as a mechanical carrier of infection from female to female. This assumption, based on circumstantial evidence, was not confirmed by the results of the experiments undertaken by the division. A cockerel was allowed to run with a pen of carrier and healthy birds without the latter contracting the disease.

Attempts to transmit the disease to healthy cockerels by association with carrier cockerels also failed.

METHOD OF SPREAD AMONGST ADULTS.

At this stage the question naturally arose why the disease spread in some of the pens and not in others. An interesting explanation was found in the results of the bacteriological examination of the birds comprising the pens. The pens in which the disease had spread contained birds which were passing the germ of bacillary white diarrhoea in their droppings. The pens in which the disease had not spread did not contain any birds which were passing infected droppings.

This previously unrecorded observation is important because it indicates that special attention should be paid to the disposal of the droppings in affected flocks. It also raises doubt regarding the advisability of feeding grain in the litter and of retaining litter unchanged in a poultry house for long periods.

ACCURACY OF THE BLOOD TEST.

In the absence of any general agreement amongst veterinarians as to what constitutes a reaction to the blood test, the division, after a prolonged investigation of the problem has set up its own standard. During the year the results of testing were compared with the results obtained by bacteriological examination. It was found that 86 per cent. of birds which reacted were carriers of the disease while 91 per cent. of birds which failed to react were healthy.

An important phenomenon was observed during the course of this work. Seven carrier birds which were repeatedly tested over a period of 20 months showed a marked fluctuation in the blood reaction and on 16 occasions all these birds would not have been picked out by the standard test commonly employed in certain other countries. On only one occasion would the stringent test carried out by the division have failed to identify all the birds.

IMPROVED DIAGNOSIS IN CHICKS.

It is now possible to assess the practical value of the bacteriological research work undertaken last year regarding improved methods of examining chicks for bacillary white diarrhoea. No less than eleven outbreaks of the disease were detected by the new methods which would not have been recognised by the methods formerly employed.

SOURCE OF HATCHING EGGS.

Considerable difficulty was experienced during the year in obtaining information regarding the source of the eggs from which diseased chicks submitted for examination were hatched. It is important that this information should be supplied in order that county poultry instructors may get in touch with the owners of affected flocks, many of whom are quite unaware that they are selling diseased eggs.

9.2 per cent. of the outbreaks confirmed by the division during the year were traced to eggs imported from Great Britain.

B.W.D. IN TURKEYS.

An outbreak of bacillary white diarrhoea was encountered amongst young turkeys. It was intended to investigate the congenital aspect of the disease in these birds but the farmer was unwilling to sell the mother turkey concerned.

IMPORTANCE OF WORMS.

The thread-like worms referred to in the last annual report were the cause of heavy losses during the year. In view of the difficulty experienced by breeders in obtaining a reliable remedy, the division arranged for the manufacture of capsules containing nicotine sulphate and a selected fuller's earth. These can be obtained through retail chemists.

POULTRY VACCINES.

Satisfactory reports continued to be received regarding the value of vaccines against diphtheritic roup and fowl typhoid. It is interesting to record that the latter disease was confirmed in pheasants by the division.

General.

Miscellaneous specimens numbered 1,832, an increase on last year's total. They covered all classes of domesticated animals and included several cases of unusual interest.

LAMBING SICKNESS.

In the early months of the year the division encountered several outbreaks of lambing sickness amongst ewes in three different counties. The disease is said to be due to a deficiency of lime (calcium), but attempts to cure affected sheep by feeding and injecting calcium salts failed. The animals were, however, in an advanced stage of the disease and better results might have been obtained if it had been possible to apply treatment in the early stages. It is hoped next year to carry out a controlled experiment to test the preventive value of feeding lime salts.

Tuberculosis.

There was a considerable increase in the number of milk samples submitted under the Tuberculosis Order, but the number of positive cases was about the same as last year.

Education.

The staff of the division has continued to be responsible for the teaching of Veterinary Science in connexion with The Queen's University of Belfast.

17 lectures and demonstrations were given during the year to veterinary surgeons and farmers. A largely attended meeting of the North of Ireland Veterinary Medical Association was held at the laboratories of the division.

Publications.

" Selective media for the cultivation of *Bacillus pullorum* and *Bacillus sanguinarium*. By W. R. Kerr, Journal of Comparative Pathology, Vol. XLIII, Part I.

" Fowl typhoid and bacillary white diarrhoea." By J. P. Rice. Proceedings of the International Veterinary Congress, 1930.

" Intestinal worms of poultry." By J. P. Rice. Eggs, Vol. XXIII, No. 4.

" Mutilation of Poultry." By J. P. Rice. Veterinary Record, Vol. X, No. 31.

POULTRY DIVISION.

Further demonstration experiments with poultry were carried out. These comprised a demonstration of the value of including oyster shell in the feeding of layers, a comparison of oyster shell and limestone grit, a comparison of Sussex ground oats and ordinary ground oats, and a comparison of an all-meal mixture and grain with a mixture composed of meals and potatoes with grain.

The results must be verified by further tests before definite conclusions can be drawn, but they indicate that oyster shell is a necessity for satisfactory egg production under the conditions ruling in the experiment, that limestone grit is inferior to oyster shell, and that the inclusion of a reasonable proportion of boiled potatoes in a suitably balanced meal mash is an economical practice when potatoes are cheap.

LAYING TEST.

The Ministry's eighth laying test which was conducted at Stormont finished on 16th September, 1930. There were 103 pens, each containing six pullets in the test, an increase of 2 pens over the previous year.

The entries exceeded the number of pens available and a ballot had to be taken. Every entrant was allotted one pen and fourteen entrants had two pens each.

The results of the test were satisfactory ; there was a slight increase in the average number of eggs laid per pullet, and also in the size of egg. Out of the total of 103 pens, 18 or 17.4 per cent. were disqualified for producing 300 or more second grade eggs, whereas in the previous test 19.8 per cent. of the pens competing were disqualified. There was a number of very poor layers in the test, but against that there was an increase in the number of pullets eligible for copper rings and special

certificates of merit ; 149 or 24 per cent. of the pullets entered were marked with sealed copper rings at the conclusion of the test, and in the previous test 117 or 19.3 per cent. were so marked. 72 pullets were awarded special certificates of merit ; this certificate is awarded to all pullets producing 220 or more first grade eggs. A pen of Rhode Island Reds, the property of Miss Irwin, Co. Armagh, qualified for the award of the Silver Cup presented by the Ministry for the pen of pullets laying eggs of the highest market value. This is the first time since the inauguration of the tests that a pen of Rhode Island Reds has succeeded in winning this prize. The pen's score was a very creditable one, the total number of eggs being 1,470. This figure constitutes a new record for the breed in an Irish test. An individual pullet also of this breed laid 291 eggs during the 48 weeks (336 days) of the test, making another Irish record for the breed. This pullet has qualified for the award of the silver medal for the best pullet in the test.

The Ministry's winter egg prize and the silver cup presented by the Scientific Poultry Breeders' Association have been won by a pen of White Wyandottes, the property of a County Londonderry station-holder, and this pen has also been adjudged the winner of the Ministry's prize for the pen of White Wyandottes of best type. The following table shows the number of pens from each County entered in the test for the past eight years :—

	1922–23 Pens.	1923–24 Pens.	1924–25 Pens.	1925–26 Pens.	1926–27 Pens.	1927–28 Pens.	1928–29 Pens.	1929–30 Pens.
Antrim	3	16	17	11	13	22	20	22
Armagh.. ..	9	12	19	19	10	10	9	8
Down	23	34	24	29	24	32	42	33
Fermanagh ..	1	2	2	2	4	5	6	4
Londonderry ..	3	2	3	2	5	10	10	13
Tyrone	6	5	7	8	16	12	14	23
TOTALS ..	45	71	72	71	72	91	101	103

Particulars of eggs laid, value of eggs, cost of food and gross return over cost of food in respect of each of the eight tests carried out by the Ministry are given below :—

48 weeks ended.	No. of pullets penned.	No. of eggs laid.	Average number of eggs per bird.	Average value of eggs per bird.	Cost of food per bird.	Gross return per bird over cost of food.
				s. d.	s. d.	s. d.
16th Sept., 1923	270	51,025	188.98	32 6.9	9 10	22 8.9
15th Sept., 1924	426	77,383	181.6	33 0.5	9 10.25	23 2.25
16th Sept., 1925	432	78,565	181.86	31 10.7	10 1.6	21 9.1
16th Sept., 1926	426	80,798	189.66	30 6.64	10 1.8	20 4.84
16th Sept., 1927	432	81,732	189.19	26 9.2	10 2.2	16 7
15th Sept., 1928	546	100,378	183.84	26 4.28	10 2.1	16 2.18
16th Sept., 1929	606	109,970	181.47	27 9	11 0.25	16 8.75
16th Sept., 1930	618	112,418	182	27 7	9 0.59	18 6.41

Preparations have been made for the ninth test, which will commence on 15th October, 1930.

CROP AND ANIMAL HUSBANDRY DIVISION.

The work carried out by this Division may be conveniently reviewed under the following sections :—Teaching, Advisory Work, Research and Experimental Work and General.

TEACHING :—

The Division carried out, in connection with the Agricultural Faculty of the Queen's University of Belfast, all the teaching work in Crop Husbandry, Animal Husbandry and Farm Management. In addition to lectures in the University, demonstrations were given throughout the year to Students at the farm of the Agricultural Research Institute of Northern Ireland at Hillsborough and other farms in the province, where special features of agricultural interest existed. It was found possible this year to extend this branch of the work and a tour of a week's duration was arranged and carried out in the South of England in July.

Several evening lectures have been given to branches of the Ulster Farmers' Union and Milk Recording Associations.

ADVISORY WORK :—

The number of enquiries from farmers asking for advice and help on some particular farm problem has increased during the last year. The enquiries again cover a wide field, including the management and stocking of grassland. the making of ensilage, farm organisation, and management of livestock. Advice has been given by letter and when necessary visits have been made to discuss the problem on the spot.

RESEARCH AND EXPERIMENTAL WORK :—

By the courtesy of the Trustees of the Agricultural Research Institute of Northern Ireland a number of experiments in connection with the production of early maturing beef have been carried out at the Research Farm at Hillsborough during the last three years. Various problems in connection with feeding have been investigated by the Chemical and Animal Nutrition Division. A statistical examination of the results from these feeding experiments has been made by this Division and is now ready for publication. Different systems of rearing, management and disposal of the calves have been studied and a report is now in course of preparation describing these systems and their results, together with all details of live weight gains and cost of production.

Potatoes.—The North of Ireland has long had a large export trade in " ware " potatoes but it is becoming increasingly evident that more attention could, with profit, be directed towards the development of a trade in " seed " potatoes. Many parts of Northern Ireland are ideally suited climatically for the production of " seed " potatoes and when it is realised that climate, due to its effect on many diseases, is the biggest individual factor in the production of good " seed " potatoes it can be seen that a very large initial advantage is possessed for such a trade.

An experiment was carried out last year to determine the effect of the size of seed tuber planted on the relative proportions of ware, seed, and chats in the resultant crop. A general indication of this effect was obtained but the differences among the plots was very large, mainly owing to soil variation. It was decided to repeat the test and a somewhat similar experiment has been carried out this year.

Grass Silage.—It is now generally recognised that for really good management of grassland, efficient and reasonably close grazing is the first essential. When it is not possible, either by virtue of a good growing season or insufficient number of stock to keep the grass eaten down, the surplus should be mown and converted into hay or silage. It was mentioned in last year's report that the Division was co-operating with the owner of a large, permanent grass farm in County Down in an experiment to convert the surplus grass into silage. This work was continued throughout the winter and a record was kept of the quantities of silage fed and the live weight gains put on by the bullocks. Analyses of the silage were made and a short account of the work to date has been prepared for the next issue of the Ministry's Journal.

Reclamation of Bog.—The Division has co-operated with an Agricultural Firm in County Armagh in the reclamation of used up bog. During the year some five acres of this bog were dug up and all tree stumps, etc., removed. A heavy dressing of pig manure was dug in and a dressing of two tons of lime applied per acre during the winter. In the spring the land was ridged and, with the exception of a small area for cabbages, planted with potatoes. Various mixtures of artifical manures were applied at time of planting. The potatoes were planted primarily for seed and a very heavy crop of excellent quality (seed) obtained on the entire area.

This work is being continued and a further eight acres is being reclaimed this winter.

Full records of cost, effect of manures, crop yields, etc., are being kept.

Cost Accounts.—Full and detailed cost accounts, covering all the farming operations, are kept by the Division, with the help of the Agricultural Research Institute Staff, at the farm at Hillsborough. Data is now available for two complete years but it will be necessary to accumulate data over a number of years before the full value of the figures is obtained. At the same time the data already available has been of material use in the management of the farm; for some of the experiments being carried out and for teaching purposes at the University. There is no data of this type available for Northern Ireland and it is confidently anticipated that the information now being collected will be of very great value.

GENERAL :—

Progress has been made during the year with the reconstruction and renovation of the existing farm buildings at the Research Farm at Hillsborough. The Division has been responsible for the planning and general management of this work and all the work has been carried out by the farm staff, which includes a handyman and blacksmith.

A new byre was built two years ago in which Grade A (Tuberculin Tested) Milk is produced, and a start has now been made to renovate an old existing byre and convert it into a byre sufficiently good to enable the production of Grade A (Tuberculin Tested) Milk to be carried out. For the production of this high quality milk it is not elaborate buildings that are necessary but a high standard of all round cleanliness and everyday attention to method and details.

Visits.—During the summer months a considerable time of the staff of the Division was occupied in conducting parties of Farmers, branches of the Farmers' Union, Milk Recording Associations, etc., etc., round the Research Farm at Hillsborough. This allows of personal contact with the farming community and is the ideal channel for the dissemination of the results of research and experimental work.

DAIRY BACTERIOLOGY DIVISION.

The work of this division can be considered under three main headings : (1) routine and advisory work which arises out of the Grade A (Tuberculin Tested) Milk Act of 1927, (2) advisory work in connection with the creameries, and (3) assistance and advice given to farmers in solving such problems as " off " flavours and taints in dairy products.

GRADE A (TUBERCULIN TESTED) MILK.

The Sale of Milk Act (Northern Ireland), 1927, made provision for the licensing of one grade of milk, that is Grade A (Tuberculin Tested). Under this Act licences are issued to milk producers who have their herds tuberculin tested at intervals of six months and who conform to other requirements as regards byre, dairy, equipment and the production of milk of a certain standard of cleanliness.

Since the introduction of this legislation there has been a steady increase in the number of herds licensed. During the period covered by this report there was an increase of 4 licensed producers, which brought the total number of licence holders up to 24, and in addition there are 3 licensed retailers. There has also been a steady increase in the number of schools, public institutions, child welfare centres, hospitals and sanatoria that specify Grade A (Tuberculin Tested) milk when advertising their contracts. Recently, however, there has been a decided increase in the number of milk producers and retailers who bottle ordinary low grade milk, much of this is sold as pasteurized. In some instances this is being done in dairies and plants which are not properly equipped for the thorough cleaning and sterilizing of the glass ware. No legislation at present exists for the control of this milk supply with the result that much of it is being sold as equal to graded milk. This is very undesirable as milk bottles in circulation if not sterilized after each collection may act as carriers of infectious diseases. Education of the public, and legislation prohibiting the bottling of milk except on approved premises would prove of great value in protecting the consumer, who at present is inclined to look on any bottled milk as being superior to ordinary loose milk.

NORTHERN IRELAND CLEAN MILK COMPETITION.

In order to demonstrate to milk producers that without expensive and elaborate plants, and specially constructed buildings, it is possible to produce milk of a very high standard, a Clean Milk Competition was initiated during the year. This was the first of its kind held in Northern Ireland and it was confined to producers of Grade A (Tuberculin Tested) milk licensed by the Ministry of Home Affairs.. The competition, which attracted an entry of 19 producers, extended from the 1st April to 30th September, 1930. It was held over a period when it is very difficult to produce milk of a high keeping quality. The number of samples (all of which were surprise) taken from each competitor was 12, of these 7 were evening and 5 from the morning milk. At the time of taking these samples the judges inspected the herd, byre, milkers and general equipment and allotted marks according to the following scale :—

A. Judging on Farm :	
Equipment	50
Methods	150
B. Examination of Milk :	
Bacterial count	180
Absence of Coliform organism	100
Butter fat	10
Solids not fat	10
Total	500

The total number of evening samples taken was 133 and of morning 95. All samples were examined at approximately the same age, and in all cases when not less than 23 and not more than 28 hours old—samples awaiting examination were kept at 60°F. which is about average room temperature. It must be pointed out that keeping milk for such a period before examination is a little unfair to the producer, as the standards laid down by the Act apply to milk as it is delivered to the consumer—this generally takes place when it is from 2 to 20 hours old.

A general survey of the results showed that 18 of the 19 competitors secured over 78 per cent., while 13 secured over 84 per cent. of the total marks obtainable. On the whole the competition has been entirely satisfactory, 18 of the 19 competitors have qualified for the Ministry's Certificate of Merit. This clearly demonstrates that milk of a high hygienic quality can be produced in ordinary byres provided reasonable precautions are taken, and that elaborate and costly buildings are unnecessary. The most important precaution and one which costs very little is the thorough washing of the udders, and if this is followed by clean milking a great step has been taken in the production of good milk of high keeping quality. Milk as drawn from a healthy cow is pure and free from an excessive number of organisms. If clean methods are adopted in the byre and dairy, with the additional precaution of bottling the milk in sterile bottles, no better or cheaper food is obtainable.

In connection with the Sale of Milk Act (Northern Ireland), 1927, and the 1930 Clean Milk Competition, the total number of samples examined bacteriologically was 1,170, of these 332 were surprise samples. In addition numerous visits were paid to prospective producers. Several problems were investigated for licensed producers on their premises and in the laboratory and advice given as to the source of troubles and means of remedying them.

THE INTRADERMAL TEST FOR BOVINE TUBERCULOSIS.

Herds licensed by the Ministry of Home Affairs are subjected to tuberculin testing at intervals of six months. As many of the herds are small and there is continual buying in of cows, the question as to which was the most efficient and reliable method of testing was of great importance. It is well known that a tuberculous bovine which has reacted to the subcutaneous test may not react to a second dose if administered subcutaneously within four weeks of the previous test. This gave unscrupulous dealers an opportunity of imposing tuberculous cattle on the unsuspecting herd owner, as the animal could be " doped " for the occasion. Until recently the test prescribed by the Ministry was a combination of the subcutaneous and the ophthalmic. Small scale investigations on the lines suggested by the Tuberculin Committee of the Medical Research Council have been carried out by this division. The results indicate that the intradermal is undoubtedly more reliable than either

the subcutaneous or ophthalmic tests. Accordingly a recommendation was made to the Ministry of Home Affairs to amend the regulations making the intradermal test compulsory. The necessary amendment was made in April of 1930, and a memorandum was issued to each veterinary surgeon interested informing him of the change and giving full particulars of the technique and observations required for the test.

CREAMERIES.

In connection with the creameries some 102 samples were examined, these included 40 of milk and cream, 33 of butter, 16 of water and 13 of " starter " cultures. As a result of these examinations advice was given as to the quality of the mixed milk supply, the efficiency of the pasteurizing and cooling process and the sources of contamination if any in the water supply, the cream pumps or ripening vats or in the churn. In addition experiments were carried out on many " starters " used by creameries, and as a result of bacteriological examination some were found to be contaminated with undesirable types of bacteria, yeasts and moulds. This was apparent in the laboratory before any obvious change was noticed in the creamery. Many of the water supplies were found to be heavily contaminated with types of organisms associated with rapid deterioration of butter. In some cases the results of an efficient pasteurization was shown to be entirely negatived by re-contamination from dirty cream pumps, ripening vats and churns.

ADVISORY WORK.

During the year many problems were investigated as a result of 47 casual samples which were submitted by farmers and veterinary surgeons. These included cases of milk taint troubles, suspected tubercular milk, cream and butter taints. The division also undertook the inspection and testing of a dairy plant which had been entered for the new inventions class of the London Dairy Show.

SPECIAL HORTICULTURAL EXPERIMENTS.

Black Currant Mite.—The experiments which were in progress at two centres in 1927-28 were continued during the past year. The results obtained during this year were not so promising as in previous years.

Capsid Bug Experiments—Apple Trees.—The experiment on trees of the variety " Grenadier " was conducted on the same lines as previously. The crops on the plots which had been twice sprayed with Bordeaux Mixture to which Nicotine or Nicotine Sulphate had been added were much heavier and contained fruit of a larger size and of better quality than those on the plots which had been sprayed with Soft Soap and Nicotine or Nicotine Sulphate. The damage to the fruit through punctures made by Capsid bugs was somewhat less on the plots sprayed with Nicotine, but as Nicotine is more than double the price of Nicotine Sulphate it would appear that the latter is the more economical form to use for fruit tree sprays.

A fresh series of experiments on the control of Capsid bugs by means of a number of recently introduced High Boiling Neutral Tar oils were carried out during the past year. These experiments were conducted in two orchards and the sprays were tested on the following varieties of trees :—

(*a*) Bramley's Seedling ;
(*b*) Lane's Prince Albert.

In orchard (*a*) three of the high boiling neutral tar oils, made up with water in accordance with the manufacturer's instructions, were applied to the trees during early March. A number of trees were left unsprayed as a guide for comparative purposes and the trees in each plot were sprayed three times with Bordeaux Mixture at the periods recommended for the control of Apple Scab. It was evident that none of the oils tested afforded any control over these insect pests, and a large percentage of the fruit was seriously damaged early in the season and rendered practically useless for market purposes.

In orchard (*b*) fourteen plots were sprayed with high boiling neutral tar oils and three plots with emulsified oils of the paraffin series during the first week of March. The plots were examined when the trees came into flower and a count made of the number of spurs showing leaves punctured by the insects. This examination seemed to indicate that some of the paraffin sprays had reduced the attack. Later examination, however, did not confirm these observations. The crop on each plot was rather small but the fruit was graded into damaged and undamaged lots. The

percentage of damaged fruit on the plots sprayed during March with the different oils was almost as great as that on the plots not sprayed at that time and much greater than on the plots in the same orchard sprayed with Nicotine Sulphate. All the trees in each plot were sprayed with Bordeaux Mixture at the periods recommended in Leaflet No. 33, " Spraying Calendar for Apple Orchards."

Capsid Bug and Apple Scab Experiments.—These experiments were continued on the same lines as in the previous year (*see* last year's report). The relative efficiency of the engine driven pump working at a pressure of not less than 200 lb. per square inch and the manual pump, for the application of sprays, was again examined. The apples on the plot sprayed by means of the engine driven pump showed greater freedom from capsid bug and apple scab damage than those on the plot where the manual pump had been used.

Thinning Apples Experiment.—An experiment was undertaken this year to ascertain if the cost of thinning apples to 6 inches apart, during seasons when the trees are bearing heavy crops, would be recouped by the extra return for the fruit obtained. Two plots were selected in an orchard of " Bramley's Seedling " where the trees had been sprayed and had borne heavy crops of apples for the past two or three years. The trees in each plot were selected as uniformly as possible and the thinning was carried out during the last week of June. The plot containing thinned trees could be readily recognised during the latter part of the season owing to the high proportion of large, well-shaped fruit borne on the trees. The produce from each plot was graded according to size and weighed. More than double the weight of apples over 3 inches in diameter was obtained from the plot containing the thinned trees than from the plot where thinning had not been done. In addition, the unthinned trees yielded more than ten times the weight of apples under 2½ inches in diameter, which was obtained on the plot where thinning had been carried out. It is, therefore, evident that when a heavy " set " of apples is obtained thinning during the end of June has decided advantages—the fruit produced is large and shapely and there is a substantial decrease in the proportion of small apples. As small apples are in poor demand and yield low returns to the grower, thinning is necessary to obtain best results. It is proposed to repeat this experiment next season.

ULSTER DAIRY SCHOOL FARM.

The farm was run on somewhat similar lines to previous years. The dairy herd of upwards of 40 cows was supplemented with a number of home-bred first calving heifers. As the dairy herd is maintained with the principal object of providing practical instruction in dairy work generally, its management is on lines calculated to be of the greatest value to the students. Thus, careful milk records are kept, the feeding is on suitable lines and the records of quantity and quality of milk form the basis on which animals for breeding are selected.

As far as possible the necessary replacements in the dairy herd are made from animals bred on the farm and in this way an effort is being made to build up a herd of uniformly good animals.

The crops grown on the farm are principally those which can be utilised for the feeding of the cows and young stock, for the rearing and fattening of pigs and for poultry feeding.

The separated milk available from the dairy is used for calf-rearing and pig feeding in addition to the daily supply given to the poultry section.

Many experimental plots were arranged in connection with the production of crops. Thus tests comparing varieties of potatoes, oats, swedes and mangels were laid down and yields ascertained. Extension plots of promising new varieties of potatoes and oats were also grown with the object of obtaining seed for subsequent distribution. Several feeding experiments with livestock were done. Seven lots of pigs from three different tests and two lots of calves from a calf-rearing test were exhibited in the Ministry's educational exhibit at Balmoral Show. In addition a sow and litter for which a record of the cost of rearing to weaning time had been kept were also provided for this exhibit.

In the poultry department an interesting experiment comparing the returns from

White Leghorn pullets of the same breeding but hatched in March, April and May, respectively was carried out. The results from this test which show a decided advantage in favour of early hatching are as follows :—

Time of Hatching.	Average number of eggs laid per bird.		Average value of eggs per bird.	
	To end of March, 1930.	To time birds were 1-year-old	To end of March, 1930.	To time birds were 1-year-old
			s. d.	*s. d.*
27th March, 1929,	96.1	93.0	16 1½	15 10½
27th April, 1929	63.5	79.0	9 5	10 8½
27th May, 1929	40.1	66.5	5 8½	7 11

This test, which shows that the value of eggs produced by the March hatched birds was approximately twice that of the eggs laid by the May hatched birds to the time they were one-year-old respectively was of considerable value to the pupils as a demonstration of the importance of early hatching. It also provided an excellent object lesson to poultry keepers inspecting the Ministry's educational display at Balmoral Show where the birds with particulars of the production from the respective lots were exhibited.

NORTH-WEST SCHOOL FARM.

The farm attached to the School comprises about 52 acres. Farm buildings suitable for the particular system of farming adopted were erected in 1925. These include stable, byre, loose boxes, piggeries, special threshing barn and various store rooms for corn, potatoes, fruit and feeding stuffs. Ample provision is made for the threshing and storage of small lots of oats without risk of mixing, while the feeding house has facilities for the carrying out of experimental work on the feeding of livestock.

Several livestock experiments were carried out during the year. A comparison of different rations for fattening pigs, in which the chief object was the demonstration of the economy in including a large proportion of home-produced foods, was made with four lots of pigs. The results showed that under suitable conditions the inclusion of a proportion of ground oats and boiled potatoes provided a remunerative market for these commodities ; also that separated milk is a valuable food for pig-feeding, but that an efficient substitute is extracted soya bean meal and minerals. These lots of pigs were exhibited in the Ministry's educational display at Balmoral Show and aroused considerable interest. Further tests with milk substitutes for pig fattening were carried out as was a demonstration on the value of producing baby beef.

On the tillage side, the farm may be regarded as an experimental centre. Most of the crops comprise test plots of potatoes, oats, turnips, mangels, etc. A large scale test with upwards of fifty varieties of potatoes was carried out and in addition tests were arranged with the object of ascertaining the effect of cutting seed and of liming the cut surfaces prior to planting ; also to test the influence of manuring on quality. It is hoped that detailed results will be available in due course. The farm is also a source of supply of seed potatoes of the different varieties included in County Instructors' variety trials and small areas are planted each year with specially selected stocks for this purpose.

In addition to a series of small scale variety plots of oats, the farm is utilised as a centre for the propagation of new varieties or strains of oats raised by the Ministry's Plant Breeding Station, the produce of these extension plots being threshed on the farm and returned to Stormont as required.

The vegetable garden, while providing a constant supply of a variety of fresh vegetables for the school all the year round, serves the further purpose of providing useful information from tests with varieties of vegetables and methods of cultivation.

Similarly the fruit garden is utilised to the full for experimental work. Many different tests in regard to the suppression and control of the pests and diseases of fruit trees and bushes are in progress. The advantages of poultry-keeping in conjunction with apple growing, are demonstrated in routine practice.

Many organised parties of visitors from Milk Recording Associations, etc., were received at the School during the summer months, and the members had full opportunity of seeing all aspects of the work that is being done. These parties comprised over 400 persons and it is believed that they will be the means of making the facilities available for the teaching of girls more widely known. The scholarships provided by the different County Committees of Agriculture were well availed of during the year.

APPENDIX II.

AGRICULTURAL LAWS.

APPENDIX II.

DISEASES OF ANIMALS ACTS.

NEW ORDERS.

(*a*) *The Epizootic Abortion* (*Northern Ireland*) *Order of* 1930, dated 31st January, 1930. Prior to the making of this Order the Ministry had for a considerable time been greatly perturbed by the prevalence of the disease known as Epizootic Abortion. With a view to securing the fullest possible information on this point veterinary practitioners throughout Northern Ireland were circularised and asked to what extent this disease prevailed in their districts. On careful consideration of the information obtained in this way the Ministry made the Order which, *inter alia*, makes it an offence for any person to expose, or cause to be exposed, in any market, fair-ground or saleyard, a cow or heifer which, to his knowledge, or according to information furnished to him, has calved prematurely within the preceding two months. A person selling otherwise than in market, fair ground or sale yard such a cow or heifer is required to give notice of the fact to the purchaser. Furthermore, it is unlawful to send such an animal for service, unless due notification is given to the owner of the bull. It is also an offence to permit such an animal to graze on common land or unenclosed land, in a field or other enclosed place not so fenced as to prevent cattle entering or escaping therefrom, on the side of a highway or on any land where there are cattle not the property of the owner of the affected animal.

(*b*) *The Swine Fever* (*Northern Ireland*) *Order*, 1930, dated 14th April, 1930. In order to keep in closer touch with the trade in swine purchased by dealers in the Irish Free State, and subsequently sold in Northern Ireland, the Ministry made this Order, which requires that dealers purchasing store swine in the Irish Free State shall be licensed by the Ministry, and shall keep proper written records of all such transactions (including the names and addresses of buyers and sellers).

(*c*) *The Sheep Scab* (*Northern Ireland*) *Order*, 1930, dated 24th April, 1930. In pursuance of its efforts to eradicate Sheep Scab from Northern Ireland flocks, the Ministry made this new Order, which is in all material respects identical with the parallel Order of the British Ministry. The Ministry has incorporated in this new Order provisions absent in the old Order, which, in the light of experience, appeared to be essential. These new provisions are briefly : (1) The existence of Sheep Scab on the *carcase* of a sheep is now notifiable ; (2) a veterinary practitioner who locates Sheep Scab in the course of his private practice is now required to give notification of that fact to the proper authority ; (3) sheep in respect of which either a Detention or Isolation Notice has been served are now required to be double-dipped in the presence of a Veterinary Inspector ; (4) persons clipping or dipping sheep on infected premises are now required subsequently to disinfect themselves and all instruments used, in a proper manner ; (5) in a case in which the owner of diseased sheep cannot be traced, the Local Authority in the new Order has power to slaughter the animals and credit any money received by their sale to the Local Authority account ; (6) in the new Order it is made an offence to sell or use for the purpose of complying with the provisions of the Order a Sheep Dip which has not been approved previously by the Ministry. Labels containing full instructions as to use are now required to be affixed to approved Sheep Dips, and the Ministry is empowered to sample all approved Sheep Dips.

(*d*) *Transit of Animals* (*Northern Ireland*) *Order of* 1927, *Amendment Order*, 1930. dated 28th July, 1930. By this Order the Ministry amended its Transit of Animals Order so that vessels which subsequent to the cleansing and disinfection required in the principal Order are used for the carrying of cargo other than animals, shall before the taking on board of any animal be cleansed by the removal of all hay, straw or other packing material, and all chemicals or other agents or things liable to cause injury to animals from all parts of the vessel with which any animal may come in contact.

FOREIGN ANIMALS.

During the period covered by this Report there were no foreign animals landed in Northern Ireland and found diseased.

OUTBREAKS OF DISEASE.

During the year, the following outbreaks of disease were reported to the Ministry :—

Bovine Tuberculosis.		Anthrax.	Parasitic Mange.	Sheep Scab.	Swine Fever.
No. Out-breaks.	No. of animals declared affected.	Outbreaks.	Outbreaks.	Outbreaks.	Outbreaks.
1,054	1,105	None	3	83	48

IMPORTATION OF BREEDING ANIMALS.

The Ministry, after prosecuting careful inquiry in each case, issued permits for the importation from approved farms in Scotland of the following breeding animals for direct movement to approved isolation premises on importers' farms in Northern Ireland :—74 cattle ; 625 sheep ; 3 goats and 5 swine. Details of these importations are :—Shorthorn, 34 heifers ; Ayrshire, 2 bulls, 8 cows, 29 heifers ; and one British Friesian bull. Sheep ; 4 Border Leicester rams ; one Cheviot ram ; 2 Shropshire rams ; 1 Blackface ram and 605 Blackface ewes ; and 12 Suffolk ewes. One of these Shropshire rams was subsequently moved into the Irish Free State. The goats were of the British Toggenburg breed, and the swine (2 boars and 3 sows) were Large Whites.

The Ministry was able to make the usual autumn arrangements for the importation of breeding sheep from certain Scottish Sheep Sales in connection with which the promoters undertook to comply with conditions laid down by the Ministry calculated to minimise the risk of the introduction of disease. The animals imported in this way were : Blackface, 91 rams and 7,629 ewes ; Border Leicester, 13 rams and 1 ewe ; and 264 Cheviot ewes. Of these sheep 151 (108 Blackface ewes and 43 Cheviot ewes) were destined for the Irish Free State, but were imported through a port in Northern Ireland.

During the period covered by this Report the Ministry was able to organise the importation of eight consignments (particulars of which are appended) of breeding animals from Great Britain via the Belfast Animals' Quarantine Station :—

First Consignment :
12 Ayrshire cows.
2 Suffolk rams.
5 „ ewes.
1 Shropshire ram.
3 Border Leicester ewes.

The cattle came from a Dispersal Sale in Scotland. The sheep came from farms in Scotland. Three of the rams and five of the ewes were for residents in the Irish Free State, who paid the appropriate Quarantine Station maintenance charges.

Second Consignment :
1 Shorthorn bull.
1 „ heifer.
2 Ayrshire heifers.
6 Red Poll heifers.
1 Border Leicester ram.
13 „ „ ewes.
3 Oxford Down rams.
3 „ „ ewes.
1 Anglo-Nubian female goat.

One bull and seven heifers were from farms in England and Wales, two heifers came from farms in Scotland. The sheep and the goats also came from farms in Scotland. Four rams and eleven ewes were for Free State residents, who were charged the usual maintenance fees.

Third Consignment :
4 Shorthorn bulls.
1 Ayrshire bull.
1 „ heifer.
5 Aberdeen Angus bulls.
1 „ „ heifer.

One bull and one heifer came from approved farms in Scotland, and the remainder of the animals were from Scottish Spring Cattle Sales.

Fourth Consignment :
11 Galloway bulls.
2 „ heifers.
2 Suffolk rams.
4 „ ewes.

The sheep were imported from England and the cattle were from Scottish Spring Cattle Sales.

Fifth Consignment :
6 Shorthorn bulls.
1 „ cow.
1 Ayrshire bull.
1 „ cow.
16 Aberdeen Angus bulls.
1 Guernsey bull.
1 Border Leicester ram.

The Guernsey bull came from a farm in England ; nineteen bulls and one cow were from Scottish Spring Cattle Sales, and the remainder of the animals were from approved farms in Scotland.

Sixth Consignment :
2 Shorthorn heifers.
3 Ayrshire cows.
24 „ heifers.
1 Large White boar.
6 „ „ sows.

One of the boars and two of the heifers came from farms in England and the remainder from farms in Scotland.

Seventh Consignment :
2 Red Poll heifers.
1 Hampshire ram.
11 „ ewes.
1 Anglo-Nubian male goat.
4 „ „ female goats.
2 British Alpine male goats.
1 „ „ female goat.
1 Large Black boar.
1 „ „ sow.
1 „ White boar.
1 Lop-eared boar.
4 „ sows.

all of which were from farms in England.

Eighth Consignment :
1 Shorthorn bull.
2 „ cows.
1 Suffolk ram.
4 Large White sows.

In view of the continuing freedom of Great Britain from foot-and-mouth disease, it was originally intended to permit the importation of the animals comprising the eigh th consignment directly to the importers' premises, but unfortunately an out-

break of the disease in Great Britain necessitated the diversion of the animals into the Quarantine Station.

IMPORTATION OF GOODS PACKED IN HAY OR STRAW.

Licences to the number of 423 were issued by the Ministry authorising the importation into Northern Ireland from Great Britain of goods packed in hay or straw. During this period 58 licences were also issued for the importation of goods similarly packed from places abroad.

Fireclay goods and glass bottles still form the principal commodities imported in this way, while the licences for importations from places abroad were mainly in respect of straw envelopes used in the packing of wine and spirits.

In all cases in which the straw was employed as packing material its destruction at its destination under police supervision was required.

EXPORTATION OF HORSES.

Certificates in connection with the exportation of 79 horses (22 mares and 57 geldings) to the United States of America were issued during the past twelve months. Certificates in respect of two mares and three geldings destined for Canada were also issued. These animals are mainly of the Hunter type.

TRANSIT OF ANIMALS.

The Ministry's Veterinary Inspectors during the year continued their visits to markets and fairs throughout Northern Ireland. No case, calling for action on the Ministry's part, of ill-treatment of animals was detected.

DISEASE IN MARKETS AND FAIRS.

It is pleasing to note that the operation of the arrangement inaugurated last year in County Armagh whereby Veterinary Inspectors attended all markets and fairs in the County, discloses that the number of diseased animals offered for sale in that County is negligible.

LIVE STOCK BREEDING ACT (NORTHERN IRELAND), 1922.

The object of this Act is the elimination of inferior bulls, and the standard for a licence is being gradually stiffened. Two general inspections were held in the spring and autumn at the usual centres, and the arrangements were announced as in previous years. The system of inspecting bulls for licences at the annual spring sales of the Royal Ulster Agricultural Society at Balmoral, Belfast; the North-West of Ireland Agricultural Society, Londonderry, and a few representative local sales was continued.

Tables A and B below summarise the results of these inspections :—

TABLE A.

Spring Inspections, 1930.

County.	Applications.	Licensed.	Rejected.	Withdrawn.
Antrim ..	809	627	163	19
Armagh ..	354	252	94	8
Down ..	518	422	76	20
Fermanagh ..	330	249	76	5
Londonderry ..	425	328	88	9
Tyrone ..	717	554	152	11
TOTAL ..	3,153	2,432†	649	72*

† Including three licences granted on appeal.

* Of the 72 cases in which applications were withdrawn, 24 were in respect of bulls slaughtered before inspection, 36 castrated and 8 exported, the remaining four being duplicate applications.

TABLE B.

Autumn Inspections, 1930.

County.	Applications.	Licensed.	Rejected.	Withdrawn.	Not yet inspected.
Antrim ..	439	297	112	20	10
Armagh ..	183	121	44	10	8
Down ..	226	169	40	12	5
Fermanagh	215	129	72	10	4
Londonderry	155	101	47	4	3
Tyrone ..	301	212	67	19	3
TOTAL ..	1,519	1,029†	382	75*	33

† Includes 5 licences granted on appeal.

* Of the 75 cases in which applications were withdrawn, 42 were in respect of bulls which were under the prescribed age, 29 were slaughtered or castrated before inspection, one was exported and the remainder were duplicate applications.

In 23 cases appeals were lodged against the Ministry's decision to refuse to grant licences under the Act. In 8 cases the appeals were upheld and the licences granted. In the remaining instances the original decision was confirmed and the bulls finally rejected for licences.

Proceedings were instituted against 9 persons for keeping unlicensed bulls and in 8 cases convictions were secured ; the remaining case was dismissed.

Permits were granted to owners of 256 bulls to enable them to retain the animals for a limited period to be fattened off for slaughter. Before the expiration of the permits 166 of these bulls were slaughtered. In the remaining 90 cases the permits will not expire until 31st December, 1930.

In the 76 cases where permits were unexpired at the date of the last report the animals were duly slaughtered within the period allowed.

HORSE BREEDING ACT (NORTHERN IRELAND), 1926.

The decline in the number of stallions, which had been continuous since 1923, was checked in 1926, and since then there has been a steady rise in the number every succeeding year. The number of Thoroughbreds in the seven-year period has increased from 19 to 35, while the number of Clydesdales, which had fallen to 44 in the year 1926, has gradually risen to 67, or 10 less than the number licensed in 1923. The number of stallions of other breeds—particularly half-breds and ponies—has increased from 57 in 1923 to 75 in 1930.

During the year the number of stallions offered for licence was 191 and, as indicated above, licences were granted in 177 cases, including one licensed on appeal. In 12 instances stallions were rejected for faulty conformation, and in the remaining 2 cases for both unsoundness and faulty conformation. The present position in regard to these 14 rejected stallions is shown in the following summary :—

12 castrated
2 permits granted
—
14 Total

In two cases appeals were lodged against the Ministry's refusal to grant licences, and one of these appeals was successful.

Eight permits were granted, the majority being to enable the owners to use the stallions for draught or harness purposes.

In the following table a summary is given of the results of the inspections of stallions for licences in the past three years :—

County.	No. of applications for licences.			No. of Licences granted.			No. of licences refused.		
	1928	1929	1930	1928	1929	1930	1928	1929	1930
Antrim ..	40	42	46	37	38	46	3	4	–
Armagh ..	17	16	22	15	15	18	2	1	4
Down ..	44	43	48	41	42	44	3	1	4
Fermanagh ..	17	17	20	14	15	18	3	2	2
Londonderry ..	29	33	33	26	29	30	3	4	3
Tyrone ..	15	18	22	13	16	21	2	2	1
TOTALS ..	162	169	191	146	155	177	16	14	14

The following table shows the number of stallions of each breed licensed in each county for the 1930 season :—

County.	Thoroughbred.	Clydesdale.	Half-bred of both heavy and light horse types.	Suffolk Punch.	Irish Draught.	Hackney.	Pony.	Percheron.	Total.
Antrim ..	6	14	12	2	–	3	8	1	46
Armagh ..	2	8	5	–	–	1	2	–	18
Down ..	21	12	8	–	–	3	–	–	44
Fermanagh ..	1	3	8	1	–	1	4	–	18
Londonderry ..	3	22	3	–	–	–	2	–	30
Tyrone ..	2	8	8	–	1	1	1	–	21
TOTALS ..	35	67	44	3	1	9	17	1	177

MARKETS AND FAIRS (WEIGHING OF CATTLE) ACTS 1887 and 1891.

No instances arose during the year of non-compliance with the provisions of the Acts.

DESTRUCTIVE INSECTS AND PESTS ACTS, 1877 and 1907.

(*a*) *Destructive Insects and Pests* (*Northern Ireland*) *Order*, 1922.

During the year 439 consignments consisting mainly of shrubs and bulbs from Holland and accompanied by health certificates as required by the Order were imported.

(*b*) *Importation of Raw Apples* (*Northern Ireland*) *Order*, 1930.

With a view to preventing the introduction into Northern Ireland of the Apple Fruit Fly, the Ministry made the Importation of Raw Apples (Northern Ireland) Order, 1930, which prohibits the Landing between the 7th July and the 15th November in any year, of apples imported from the United States of America where the

pest exists, unless the apples are of certain grades recognized by the American Department of Agriculture. The general effect of this Order is to exclude during the period specified low-grade American apples, it being considered that such low grade apples, being less carefully selected, would be more likely to introduce the pest than high class fruit.

Similar orders were made by the Ministry of Agriculture and Fisheries and the Department of Agriculture for the Irish Free State.

(*c*) *Sale of Diseased Plants* (*Northern Ireland*) *Order*, 1927.
The Ministry's Inspectors visited 16 sales of nursery stock in Belfast, and the County Instructors in Horticulture visited 16 auctions throughout the province, but in no instance were diseased bushes found exposed for sale. In addition to the inspection of nursery stock exposed for sale, periodical visits are paid to all nurseries in Northern Ireland.

(*d*) *American Gooseberry Mildew and Black Currant Mite.*
The number of licences issued under this Order permitting the importation of Gooseberry and Currant bushes from nurseries in England was 29, and the numbers of Gooseberry and Currant bushes imported were 7,800 and 1,800 respectively.

In the course of their duties, the County Instructors in Horticulture visited 83 private gardens and examined the gooseberry and black currant bushes therein. American Gooseberry Mildew was found in only 15 instances, as compared with 32 cases found last year. In a few cases the diseased bushes were voluntarily destroyed, as the disease was detected at too late a stage in its development for the effective use of spraying. In the remaining cases, spraying gave satisfactory results.

A slight increase in the number of cases of Black Currant Mite was reported, the numbers being 45 for this year as against 43 last season. Over 500 bushes were voluntarily destroyed by the owners, and in a few cases where the disease was slight the bushes were sprayed.

Regulations affecting the Export of Plants.
During the year the Ministry's Inspectors examined and certified 274 consignments, composed of rose trees and bulbs shipped to the principal British Colonies and the United States of America.

Black Scab in Potatoes Orders.
Following on the discovery referred to in the last Report of Black Scab Disease in the Ballycastle district in County Antrim, it was found necessary to make an Order in December, 1929, scheduling a small area comprising 27 townlands. The Order which follows on the lines of previous similar Orders requires that only immune varieties may be planted in the area scheduled and that no potatoes may be moved out of that area unless under licence.

Towards the end of last year cases of Black Scab disease were discovered in the zone in which the movement of potatoes was controlled adjoining the area scheduled some years ago in South Londonderry. An Order was, therefore, made in January, 1930, making it compulsory to plant only certain approved varieties of potatoes immune from Black Scab disease in the district concerned.

Owing to the difficulty experienced in checking the illegal movement of potatoes from the western districts included in the mid-Ulster scheduled area the Ministry found it necessary to make in April an Order prohibiting, except under licence, the movement of potatoes by motor lorry in the districts concerned.

The Ministry was obliged to have legal proceedings instituted in nine instances in which breaches of the Black Scab Orders had been committed. Two were cases of planting non-immune varieties in scheduled districts, one was a case in which the Ministry's Inspector was obstructed in the execution of his duty, and the remaining six were cases of the illegal movement of potatoes from scheduled areas. In all instances convictions were secured.

POTATOES IMPORTATION (*NORTHERN IRELAND*) *ORDER*, 1920.
Licences were issued under the provisions of the above-mentioned Order for the

importation of 20 tons, 8cwt. of seed potatoes from Great Britain. Forty-one licences in respect of 16 tons, 5 cwt. from Scotland and 26 licences in respect of 4 tons, 3 cwt. from England were issued. The varieties imported were mainly British Queen, Mid-Lothian Early, Ben Cruachan and Kerr's Pink.

WEEDS AND AGRICULTURAL SEEDS ACTS (NORTHERN IRELAND), 1909 AND 1929.

(*a*) *NOXIOUS WEEDS.*

The system of police inspection which was instituted last year was continued this year with satisfactory results. Last season the weeds scheduled were Ragwort, Thistle and Dock, but at the commencement of this season the Ministry made an Order scheduling Ox-Eye Daisy as a noxious weed.

Fifty-seven cases of non-compliance with the provisions of notices served requiring the destruction of noxious weeds were recommended for prosecution by the police. In 40 instances the weeds were destroyed after a visit by the Ministry's Inspectors. In 16 of the remaining 17 cases prosecutions were instituted, convictions being secured in 8 cases, while the remaining 8 cases are awaiting hearing. The seventeenth case is under consideration by the Ministry.

(*b*) *AGRICULTURAL SEEDS.*

With regard to the unsatisfactory samples of agricultural seeds drawn in the 1929 season to which reference was made in the last Report, the Ministry, after careful consideration, published particulars in respect of 14 of the 20 cases in which unsatisfactory features were revealed. Warning letters were issued to the vendors in the remaining six cases.

During the spring of this year 240 samples were drawn by the official samplers from stocks of agricultural seeds exposed for sale in the various towns and villages throughout Northern Ireland. The samplers were again instructed to pay special attention to seed exposed by street vendors and also to packeted vegetable seeds. All the samples drawn were analysed at the Ministry's Seed Testing Station, and in only 25 cases were unsatisfactory results obtained. The question as to the action to be taken with regard to these unsatisfactory cases is at present under consideration.

FERTILISERS AND FEEDING STUFFS ACT, 1926.

During the period 1st October, 1929 to 30th September, 1930, two samples of fertilisers and 30 samples of feeding stuffs were taken by the Itinerant Instructors in Agriculture. In addition 8 samples of fertilisers and 5 samples of feeding stuffs were forwarded to the County Analysts for test by private individuals.

On the whole, the state of the trade may be regarded as satisfactory.

BEE PEST PREVENTION (IRELAND) ACT, 1908.

The County Instructors in Bee-keeping visited 672 apiaries during the season, and advice as to treatment of bees was given. Over 2,000 stocks of bees were examined and 70 cases of acarine disease and 8 cases of foul brood were discovered. In 7 of the cases of foul brood, the stocks were voluntarily destroyed and the remaining case treated by segregation. In the cases of acarine disease Frow's Treatment was advised, except in one instance in which the stock was destroyed.

SCUTCH MILLS ACT (NORTHERN IRELAND), 1923.

The Ministry's flax inspectors visited some 60 scutch mills during the year with a view to ensuring that the requirements of this Act were being observed. In twenty-eight instances non-compliance with the statutory provisions were reported. In twenty of these cases the Ministry issued warnings that if any further breaches of the Act were brought to notice proceedings would be instituted. In the remaining eight cases the attention of the mill owners concerned had in previous seasons been drawn to the requirements of the Act and there was no option but to institute proceedings against them. Convictions were secured in each case.

SALE OF FOOD AND DRUGS ACTS, 1875-1907.

Following the receipt of complaints, the Ministry caused investigations to be made as to misrepresentation in connection with the sale of bacon by retailers in various centres. One retailer in Londonderry was visited and, asked for " best Irish Bacon," supplied imported bacon bearing traces of the distinctive brand used in the country of origin. The case was primarily one of the application of a false trade description, but as the description was verbal no prosecution was possible under the Merchandise Marks Acts 1887 to 1927. Proceedings were, however, instituted under Section 6 of the Sale of Food and Drugs Act, 1875, in respect of the sale to the prejudice of the purchaser of an article of food not of the nature, substances and quality demanded, and a fine of £10 and costs imposed. Reports of the case gained considerable publicity and the Ministry has reason to believe that the prosecution had a good effect.

The extent of the activities during the year ended 30th June, 1930, of the inspectors employed under the Acts by the local authorities in Northern Ireland, in regard to samples of milk, buttermilk, butter, margarine and cheese is demonstrated by the following tables :—

Nature of sample.	No. of samples taken.	No. of prosecutions.	No. of convictions.	Penalties imposed (exclusive of costs).
				£ s. d.
Milk	3,068	109	62	85 12 0
Buttermilk ..	583	48	47	53 5 0
Butter	893	31	27	32 0 0
Margarine ..	336	2	2	0 5 0
Cheese	226	–	–	– – –
Totals	5,106	190	138	£171 2 0

There is an increase in these figures as compared with those for the previous twelve months. During that period 4,792 samples were taken, 187 prosecutions instituted and 120 convictions obtained, the penalties imposed amounting to £134 1s. 6d.

Eight new premises in the County Borough of Belfast were registered during the year under Section 9 of the Margarine Act and Section 7 (4) of the Sale of Food and Drugs Acts, 1899, for wholesale dealings in margarine. Nine registrations were cancelled during the year under review and there were, accordingly, on the 30th June, 1930, 156 registered premises in Northern Ireland.

The present distribution of such premises is as follows :—

County	Borough of Belfast	116
„	Borough of Londonderry	10
„	Antrim	11*
„	Armagh	7
„	Down	6
„	Fermanagh	1
„	Londonderry	2
„	Tyrone	3

(* Includes one margarine and cheese factory.)

No registrations or cancellations of registration of butter factories under Section 1 of the Butter and Margarine Act, 1907, took place during the year. The number of such premises in Northern Ireland was 13.

The provision of the Sale of Food and Drugs Acts, relating to the registration of Butter Factories with the Local authority has been repealed, and in future such premises must be registered with the Ministry under the Marketing of Dairy Produce Act (Northern Ireland), 1929.

Thirty applications were received for approval, under Section 8 of the Butter and Margarine Act, 1907, of fancy or descriptive names for use in connection with mar-

garine; approval was given for twenty-five names and withheld for the remaining five names.

MARKETING OF EGGS ACTS (NORTHERN IRELAND), 1924-1928.

AMENDMENT OF THE RULES.

Experience of administration having exposed the weakness of the Rules in certain respects the following amendments were embodied in Rules issued on the 2nd June:

Size of Marking.—Eggs which prove on test not to comply with the conditions prescribed as to freshness have to be stamped with the words "Reject" or "Second" as the case may be. Experience had shown that the size of the letters prescribed for these words was too small and the Rules provided for an increased letter (one-eighth inch).

The marking prescribed in regard to cold-stored eggs and preserved eggs remains unchanged.

Identification of Supplies.—In 1928 a new regulation requiring wholesale dealers to maintain a system of recording the receipt of supplies so that, if called upon, the person from whom any particular lot of eggs had been received could be identified. This arrangement had proved most useful in tracing unsatisfactory supplies. The new regulation provided for a uniform type of record to be kept showing:

(*a*) The name and address of the person from whom the eggs were purchased.
(*b*) The date of the purchase.
(*c*) The quantity purchased.
(*d*) The name and address or the licence number of the purchaser.

The regulation now applies to all persons buying eggs for resale, whether for sale retail or wholesale.

Code Marking.—Despite the fact that cases of packed eggs bear a code reference to the date of packing it was not uncommon to find cases of holding by persons in Great Britain. In order to give the wholesale dealer despatching the eggs a surer means of determining the date of despatch it was decided to require that a docket should be included in each case of packed eggs—the docket to show the code reference to the date of packing and the initials or other reference to identify the packer and tester.

Use in Markets of Boxes marked "Collection Only."—The practice of packing in markets into new cases had been noted in a number of instances and enquiries by the Ministry's officers as to the destination of these cases had been met with the statement that they were being taken to headquarters for rehandling. In order to prevent the despatch of these eggs without further rehandling a new provision has been embodied in the Rules which requires that eggs removed from market stores to headquarters for rehandling shall be packed in cases marked "Collection Only."

Removal of ungraded eggs from Class "A" premises.—Where a licensed wholesale dealer has more than one class "A" store, provision was included in the Rules to empower the Ministry to authorise specially a wholesale dealer to remove during the period 1st January to 30th April in each year ungraded eggs from one such store to another provided the cases used were marked "Collection Only."

Packing of Duck Eggs in Markets.—It was also provided that during the period 1st January to 30th April special authority may be granted to any wholesale dealer who is the owner or occupier of class "A" premises to prepare duck eggs for consignment in any class "B" he owns or occupies in markets.

Purchase of Eggs under Cover.—The terms of the Rules have been altered to make it quite clear that every person who purchases eggs for resale, whether by wholesale or retail must make such purchases under cover. This provision has special reference to markets where all purchases must be made under cover, but it does not, of course, apply to itinerant collection in respect of which special conditions are in force.

Despatch of Consignments to Great Britain or the Isle of Man via ports other than by Northern Ireland ports.—The Ministry has arrangements at Belfast, Londonderry, Larne and Newry for the inspection of consignments of eggs en route to Great Britain or the Isle of Man. In order that the Ministry may be in a position to make special arrangements for the inspection of consignments which do not pass through these centres it has been provided that, in such cases, the Ministry must be informed three days in advance as to the route by which it is proposed to despatch the consignment, the destination of the consignment and the number of cases.

MARKETING OF POTATOES ACT (NORTHERN IRELAND), 1928.

As already mentioned in Part I of this Report the period covered by this Report was the first complete potato shipping season in which the Act was in operation. The general administration of the Act has already been referred to.

The number of merchants now licensed under the Act is 192.

EXPORT SEED TRADE.

The growing tendency of foreign countries to require that all seed potatoes imported must be of a high standard of purity is emphasised by the fact that the Maltese Government now requires an officially guaranteed standard of 97 per cent. purity for all potatoes imported into Malta. In addition, it is required that the seed imported must be guaranteed free from disease and must be contained in sealed bags. A conference of merchants engaged in the Malta trade was convened by the Ministry to discuss the various aspects of the trade and of the new requirements, and one of the decisions taken was to give every publicity to the urgent need for the thatching of potato pits and for the careful storing and delivering of potatoes so that consignments of seed would be readily available in satisfactory condition for shipment.

In connection with the development of our seed trade with Great Britain an exhibition of samples of Northern Ireland seed was arranged by the Ministry at the Imperial Fruit Show, in Birmingham, in October. Northern Ireland exhibitors were phenomenally successful, obtaining all the prizes offered, *i.e.*, six first prizes, six second prizes and four thirds. Exhibitions of seed from Northern Ireland were also arranged at the Smithfield Club Show, London, at the Grocers' Exhibition and at the Bristol Show.

INSPECTION OF POTATOES FOR EXPORT.

(*a*) *Scheduled Areas.*—The export of potatoes from scheduled areas unfortunately showed a considerable decrease, compared with the previous season. From the County Down area 18,154 tons only were exported as against 35,860 tons the previous year, while from the Londonderry area 1,107 tons were shipped this season, as compared with 9,037 tons in 1928-29. This decrease was, as has already been stated, due to the poor demand in British markets consequent on general over-production.

(*b*) *Non-scheduled Areas.*—For the reason given above there was naturally a big drop also in the exports of potatoes from non-scheduled areas, only 49,777 tons being, inspected for export. In the previous season 91,342 tons were so inspected.

Apart from consignments to Great Britain which were inspected under the provisions of the Marketing of Potatoes Act, shipments as follows for overseas markets were inspected :—

Spain and Canary Islands	4,063	tons.
Malta	3,856	,,
France	1,000	,,
Portugal	905	,,

MERCHANDISE MARKS ACTS, 1887-1926.

The agricultural or horticultural products which have been dealt with in Orders in Council under the Merchandise Marks Act, 1926, are as follows :—

(i) Honey ; (ii) fresh apples ; (iii) eggs in shell and dried eggs ; (iv) currants, sultanas and raisins ; (v) oats and oat products ; (vi) tomatoes ; (vii) rose trees, and (viii) malt products.

No instance of non-observance of the terms of these Orders has come to the Ministry's notice.

An application for an Order in Council to require the marking of imported butter was made in August by a Committee formed for the purpose and composed of Dominion dairy produce interests and of various representative bodies of consumers and producers in the United Kingdom. The application requests that the requirements as to marking of the country of origin should extend to blended butter.

The Standing Committee held several meetings at which evidence was heard and further meetings are yet to be held.

APPENDIX III.

Table giving details of the centres at which Winter Agricultural Classes were held in each County of Northern Ireland, and the number of students attending at each centre :—

County.	No. of centres.	Centres.	No. of Students enrolled.
Antrim	4	Ballymoney	13
Do.		Ballycastle	20
Do.		Lylehill	17
Do.		Carnmoney	10
Armagh	2	Cullyhanna	18
Do.		Derrytrasna	10
Down	4	Banbridge	30
Do.		Newtownards	26
Do.		Newry	22
Do.		Saintfield	25
Fermanagh ..	2	Ballyreagh	7
Do. ..		Greenhill	25
Londonderry ..	2	Broughaboy	20
Do. ..		Draperstown	20
Tyrone	6	Drumclamph	15
Do.		Drummond	13
Do.		Fintona	14
Do.		Brigh	15
Do.		Rouskey	21
Do.		Tykernaghan	14

DETAILS OF SYLLABUS OF SCHOLARSHIP COURSE IN HORTICULTURE AT GREENMOUNT AGRICULTURAL COLLEGE.

First Year : (October, 1930, to September, 1931).—A term at Greenmount Agricultural and Horticultural College, Muckamore, County Antrim. This first year may be dispensed with where one year in the horticultural course at Greenmount, or other equivalent course has already been satisfactorily completed.

Second Year : (October, 1931, to September, 1932).—A course at the Queen's University of Belfast, in specially selected subjects. The Course at the University will commence in October and end in June. The months of July, August and September, 1932, will be spent at a Botanical Institution selected by the Ministry, where the student will study the cultivation, etc., of decorative garden plants, trees and shrubs.

Third Year : (October, 1932, to September, 1933).—A course in the Horticultural Department at Oaklands, St. Albans, Hertfordshire, which will include lectures and practical work in horticulture.

Fourth Year : (October, 1933, to September, 1934).—Continuation of course at Oaklands, St. Albans, from October to December. From January to September, 1934, inclusive, the scholarship holder will be required to work in Great Britain on a commercial fruit farm selected by the Ministry.

LIST OF MINISTRY'S LEAFLETS AND OTHER PUBLICATIONS.

No. 1. Flax Seed.
„ 2. Improvement of Farm Poultry.
„ 3. Feeding for Egg Production.
„ 4. Marketing of Eggs.
„ 5. Dishorning Calves.
„ 6. The Packing of Apples in Standard Boxes.
„ 7. Potato Experiments.
„ 8. Seed Testing Station.
„ 9. The Renovation of Orchards.
„ 10. Fruit Tree Pests—Apple Capsids.
„ 11. Fruit Tree Pests—Aphides and Apple Suckers.
„ 12. Fruit Tree Pests—Caterpillars.
„ 13. Contagious Abortion in Cattle.
„ 14. Cheese-making on the Farm.
„ 15. Suitable Varieties of Fruit.
„ 16. The Feeding of Dairy Cows.
„ 17. Home Bottling of Fruits and Vegetables.
„ 18. Marketing of Dead Poultry.
„ 19. How to Feed Linseed to Calves.
„ 20. Chicken Rearing on the Farm.
„ 21. A Portable Poultry House for the Farm.
„ 22. Leather-Jacket Grubs.
„ 23. The Handling and Care of Wool.
„ 24. Fluke in Sheep.
„ 25. The Rearing and Management of Young Horses.
„ 26. Ordnance Survey Maps for Farmers.
„ 27. Clean Eggs.
„ 28. The Construction of a Laying House for Poultry.
„ 29. The Selection and Breeding of Laying Hens.
„ 30. The Feeding of Steamed Bone Flour to Farm Stock.
„ 31. Coccidiosis in Poultry.
„ 32. Roup of Poultry.
„ 33. Spraying Calendar for Apple Orchards.
„ 34. The Pruning of Apple Trees.
„ 35. The Fattening of Pigs.
„ 36. Advantages of Milk Recording.
„ 37. The Raising and Fattening of Turkeys.
„ 38. The Destruction of Charlock.
„ 39. The Production of Clean Milk.
„ 40. The Laying Down and Management of Temporary Pastures.
„ 41. Blackleg, Blackquarter, or Quarterill.
„ 42. The Compounding of Balanced Rations for Dairy Cows.
„ 43. Tuberculosis in Poultry.
„ 44. Results of Experiments with Varieties of Crops.
„ 45. The Breeding and Rearing of Pigs.

No. 46. A Monthly Calendar of Duties for Winter Egg Production.
„ 47. The Care and Management of Sheep.
„ 48. Baby Beef Production.
„ 49. American Gooseberry Mildew.
„ 50. Potato Blight.
„ 51. Butter-making on the Farm.
„ 52. Gapes in Chickens.
„ 53. Grade "A" (Tuberculin Tested) Milk.
„ 54. Breeding and Rearing of Calves.
„ 55. Destruction of Ragwort or Benweed.
„ 56. Identification of Eggs.
„ 57. The Importance of Quality in Egg Production.
„ 58. Fertilisers and Feeding Stuffs.
„ 59. Bacillary White Diarrhoea.
„ 60. Winter Agricultural Classes.
„ 62. The Production of Timber on the Farm.
„ 63. Sheep—Castration, Docking, Foot-rot and Care of Feet.

CIRCULARS.

No. 1. Phosphatic Fertilisers, 1929 (Annual).
„ 2. Fertilisers and Feeding-Stuffs Act, 1926—Decorticated Cotton Cake.
No. 5. Why Pay a Tax on the Horns of Cattle.
„ 6. Farm and Garden Pests—Remedies and Preventatives.
„ 8. Basic Slag.
„ 9. Smut in Oats.
„ 245. War on Weeds.

MISCELLANEOUS PUBLICATIONS.

Vegetable Growing.
Phosphates and Improvement of Pastures.
Store Cattle.
Reports of Egg-Laying Tests.
Crop Insurance.
List of Growers of certified crops of Immune Varieties of Potatoes.
The Ministry's Monthly Report.
Register of Premium Stallions.
A Potato Chute for the Farm.

Any of the above publications may be obtained free of charge and post free on application to the Secretary, Ministry of Agriculture, Stormont, Belfast.

The following publications can be obtained from His Majesty's Stationery Office, 15, Donegall Square West, Belfast :—

(1) The Annual Report of the Ministry of Agriculture for Northern Ireland Price 2/6 net.

(2) The Annual Report upon the Agricultural Statistics of Northern Ireland (1928). Price 2/- net.

(3) The Journal of the Ministry of Agriculture for Northern Ireland. Price 2/6 net.

(4) The Agricultural Output of Northern Ireland (1925). Price 2/6 net.

Table giving particulars regarding the demonstration plots laid down and the general work of the Itinerant Instructors in Agriculture and Overseers in each of the six counties :—

AGRICULTURAL INSTRUCTORS.

County.	Instructors employed.	Farms visited.	Lectures delivered.	Attendances at lectures.	No. of field experiments carried out.	No. of demonstrations laid down.
Antrim ..	2	839	10	412	30	230
Armagh ..	1	529	9	310	15	96
Down ..	2	845	8	350	39	166
Fermanagh	1	895	9	233	13	170
Londonderry	1	530	6	414	13	96
Tyrone ..	3	1,646	17	605	34	180
Totals ..	10	5,284	59	2,324	144	938

AGRICULTURAL OVERSEERS.

County.	Overseers employed.	Farms visited.	No. of Demonstrations laid down.
Antrim	2	1,947	288
Armagh	2	1,988	423
Down	2	1,258	301
Fermanagh	3	2,634	380
Londonderry	3	3,460	447
Tyrone	4	3,542	618
Totals	16	14,829	2,457

The foregoing figures include demonstrations with wild white clover and phosphatic manures, details of which are given in the following table :—

Table giving particulars regarding the demonstrations carried out by the Itinerant Instructors in Agriculture in regard to the improvement of pastures by the inclusion of wild white clover with a good seeds mixture and by the application of suitable manures, particularly phosphates.:—

County	Wild White Clover Number of plots.		Phosphatic Manure Number of plots.	
	1928-29.	1929-30.	1928-29.	1929-30.
Antrim	164	174	107	137
Armagh ..	81	58	72	73
Down	115	104	97	73
Fermanagh ..	31	54	159	179
Londonderry ..	109	114	124	91
Tyrone	219	107	200	225
Totals ..	719	611	759	778

Table giving particulars of the various experiments on the treatment of crops carried out by the Itinerant Instructors in Agriculture :—

Experiments.	Manurial experiments	Variety of seeds experiments	Residual value experiments	Liming experiments	Others.	Total.
Potatoes ..	15	21	—	—	—	36
Turnips ..	—	17	—	—	—	17
Mangels ..	—	9	—	—	—	9
Oats ..	10	31	—	—	—	41
Wheat ..	2	7	—	—	—	9
Hay ..	6	—	—	—	5	11
Wild White Clover ..	—	3	6	—	—	9
Grazing ..	—	—	—	12	—	12
Totals ..	33	88	6	12	5	144

Table showing operations under the Scheme of Instruction in Poultry-keeping during 1929-30 :—

County.	No. of instructors.	No. of lectures.	No. of visits.	No. of courses of instruction given.	No. of daily classes in these courses.	No. of pupils on class attendance register.
Antrim ..	2*	21	1,346	—	—	—
Armagh ..	1*	9	828	—	—	—
Down ..	2*	2	1,190	—	—	—
Fermanagh ..	1	—	880	1	1	15
Londonderry ..	2*	15	1,790	6	90	116
Tyrone ..	2	12	1,224	6	87	112
Totals ..	10	59	7,258	13	178	243

* Employed also as instructor in butter-making.

Table showing the main conditions governing the award of premiums to holders of Poultry Stations :—

Station.	Maximum Premium Payable.	No. of sittings to be distributed.	No. of eggs in sitting.	Average price per sitting.
	£			s. d.
Hen or Hen and Duck ..	7	70	12	2 6
Goose	2	12	3	3 0
Turkey ..	3	20 hens to be served at a fee not exceeding 1/– per service.		

Table showing the number of Egg Distribution Stations and the number of Sittings of Eggs distributed in each County during 1929-30 :—

County.	No. of egg distribution stations.		Sittings of eggs distributed.	No. of egg distribution stations (goose).	Sittings of eggs distributed.	No. of turkey stations.	No. of hens mated.
	Hens only.	Hens and Ducks.					
Antrim ..	44	26	10,552	18	264	82	2,500
Armagh ..	26	11	4,037	15	239	50	2,103
Down ..	54	9	8,685	16	207	84	2,880
Fermanagh ..	25	25	4,342	20	288	59	2,897
Londonderry	44	17	6,256	23	341	64	2,438
Tyrone ..	58	13	6,680	33	479	101	4,289
Totals ..	251	101	40,552	125	1,818	440	17,107
Totals for 1928-1929 ..	223	87	34,579	122	1,509	392	14,702

Table showing the number of Poultry (Hen and Duck) Stations by Breeds, and the number of sittings of eggs distributed.

Breed.	Antrim.		Armagh.		Down.		Fermanagh.		Londonderry.		Tyrone.		Total.	
	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.	No. of stations.	No. of sittings.
White Wyandotte ..	26	3,942	13	1,312	27	3,856	16	1,413	20	1,822	29	2,610½	131	14,955½
White Leghorn ..	17	2,920	7	922	8	984	13	870	14	1,384	6	470	65	7,550
B. P. Rock ..	2	144	–	–	–	–	1	82	2	105	2	172	7	503
Black Leghorn ..	–	–	–	–	–	–	1	74	–	–	1	81	2	155
Brown Leghorn ..	–	–	–	–	1	111	1	63	–	–	–	–	2	174
Black Minorca ..	1	57	1	64	1	99	3	277	1	157	–	–	7	654
Light Sussex ..	3	269	3	190	5	475	3	249	5	442	5	405½	24	2,030½
Rhode Island Red ..	21	2,797	13	1,341	21	2,951	9	700½	19	2,114	28	2,728	111	12,631½
Ancona ..	–	–	–	–	–	–	3	275	–	–	–	–	3	275
Indian Runner ..	17	59	2	29	3	34	16	230	4	54	8	124½	50	530½
Khaki Campbell ..	12	158	4	69	4	48	6	54	7	67	2	29½	35	425½
Aylesbury ..	7	206	4	110	2	127	3	54½	6	111	3	59	25	667½
Totals	–	10,552	–	4,037	–	8,685	–	4,342	–	6,256	–	6,680	–	40,552
Totals for 1928-1929	–	8,153	–	3,891	–	6,809	–	3,680	–	5,523	–	6,523	–	34,579

Table showing the amounts expended in premiums by County Committees and paid to holders of Poultry Stations under the Scheme for the Improvement of Poultry in 1930.

County.	Hen or hen and duck stations.	Goose stations.	Turkey stations.
	£ s. d.	£ s. d.	£ s. d.
Antrim	490 0 0	34 15 6	216 16 9
Armagh	255 18 0	30 0 0	136 8 0
Down	449 0 0	29 6 8	229 1 6
Fermanagh ..	275 18 0	39 5 0	162 5 0
Londonderry ..	361 16 10	44 16 8	175 11 9
Tyrone	472 0 0	62 6 8	277 15 0

Table illustrating the work performed by the Instructors in Butter-making and Home Cheese-making during 1929-30 :—

County.	No. of Instructors.	No. of lectures.	No. of visits to private dairies.	No. of courses of instruction given.	No. of daily classes in each course.	No. of pupils on class Attendance register.
Antrim ..	2	1	*	1	17	12
Armagh ..	1	–	*	1	15	8
Down ..	2	–	*	4	48	31
Londonderry	2	–	*	2	33	24
Totals ..	7	1	*	8	113	75

* Included in the number of visits paid in connection with the Scheme of Instruction in Poultry-keeping.

Table giving particulars of the work performed in connection with the Scheme of Instruction in Horticulture and Bee-keeping during 1929-30 :—

County.	No. of instructors employed.	No. of visits and demonstrations.	No. of lectures delivered.	Total attendance at lectures.	No. of demonstration plots.	No. of vegetable plots.
Antrim ..	2	1,947	22	400	51	47
Armagh ..	2	1,665	13	542	44	52
Down ..	2	1,549	10	178	18	31
Fermanagh	1	842	16	236	—	23
Londonderry	1	887	18	333	38	8
Tyrone ..	1	1,222	31	466	36	26
Totals ..	9	8,112	110	2,155	187	187

Table showing the nature of the experiments carried out by the Instructors in Horticulture during 1929-30 :—

County.	Apple Scab.	Manuring Apple Trees.	Manuring Black Currants.	Apple thinning.	Black Currant Mite.	Apple Capsid.	Control of Cabbage Root Fly Maggot.
Antrim ..	2	1	2	2	2	1	–
Armagh ..	1	2	3	2	2	2	–
Down ..	1	1	1	2	2	1	2
Fermanagh ..	1	–	1	1	1	–	–
Londonderry	1	–	1	1	1	1	–
Tyrone ..	1	–	–	1	1	–	–
Totals ..	7	4	8	9	9	5	2

Table showing the number of holdings entered for the " Prizes for Cottages competition in Rural Districts " together with the number and total value of the prizes awarded :—

County.	No. of entries.			No. of prizes awarded. in each class.			Total amount expended in prizes.
	Class I Cottages.	Class II Ex-service men.	Class III Championship.	Class I	Class II	Class III	
							£
Antrim ..	84	22	12	42	14	4	70
Fermanagh ..	17	9	6	10	5	5	43

Table giving particulars of the grants made in each county for the purpose of assisting the promotion of Agricultural Shows, Ploughing Matches, etc.

County.	Amount allocated by County Committee.	Number and value of grants estimated to be paid in respect of :—					
		Agricultural Shows.			Skilled labour competitions (ploughing matches, etc.)		
	£ s. d.	No.	£ s. d.		No.	£ s. d.	
Antrim	483 0 0	11	423 0 0		2	10 0 0	
Armagh.. ..	150 0 0	2	100 0 0		5	30 0 0	
Down	527 0 0	11	470 0 0		2	12 10 0	
Fermanagh ..	70 0 0	3	70 0 0		1	7 10 0	
Londonderry ..	135 0 0	5	97 10 0		2	14 0 0	
Tyrone ..	293 0 0	5	232 0 0		1	7 10 0	
Totals ..	1,658 0 0	37	1,392 10 0		13	81 10 0	

Table showing the amounts allocated and expended by the several county committees, together with the distribution of premiums for Stallions in the various counties :—

County.	Amount allocated by county committee	Amount expended by county committee	Number of premiums paid by county committee in respect of :—			
			Thoroughbred stallions.	Clydesdale stallions	Irish Draught Half-bred stallions.	Total
	£	£				
Antrim ..	425	425	3	6	1	10
Armagh ..	210	210	2	2	–	4
Down ..	600	595	7	3½	1	11½
Fermanagh ..	185	185	1	2	1	4
Londonderry	300	300	2	4	–	6
Tyrone ..	360	298	1	5	1	7
Totals ..	2,080	2,013	16	22½	4	42½

Table showing the values of premiums for stallions adopted by each county committee in 1930 :—

County.	Thoroughbred.	Clydesdale.	Irish Draught and Half-bred.
Antrim	2 @ £65 1 @ £50	£35	£35
Armagh	1 @ £70 1 @ £60	£40	—
Down	£60	£40	£40
Fermanagh ..	£60	£40	£45
Londonderry ..	£60	£45	—
Tyrone	£60	£40	£40

Table showing the number of mares served by each class of stallion in 1930 :—

County.	Mares served by Thoroughbred stallions.	Mares served by Clydesdale stallions.	Mares served by Irish Draught and Half-bred stallions.
Antrim	199	366	77
Armagh	57	97	—
Down	498	198	125
Fermanagh ..	54	112	63
Londonderry ..	139	306	—
Tyrone	50	354	67
Totals	997	1,433	332

Table showing the number of licensed stallions in each year from 1923.

Stallions licensed by counties. Years 1923-30 inclusive.

County.	1923	1924	1925	1926	1927	1928	1929	1930
Antrim	44	33	29	35	37	37	38	46
Armagh	6	8	7	10	11	15	15	18
Down	42	38	35	35	34	41	42	44
Fermanagh	10	9	9	11	13	14	15	18
Londonderry	35	34	27	28	24	26	29	30
Tyrone	16	19	15	13	13	13	16	21
Totals	153	141	122	132	132	146	155	177

Table showing the regulations made by the several county committees in regard to service fees for cows, etc. :—

County.	Service fees per cow.	Services.		Valuation of holding of cow owners.
		Yearling bulls	Older bulls	
		Minimum No.	Minimum No.	
Antrim ..	2/6 in all cases	30	40	Not limited
Armagh ..	2/6 to 5/–	30	40	do.
Down ..	2/6 up to £50 valuation, 5/– over £50 valuation	30	40	do.
Fermanagh ..	2/6 up to £25 valuation, 4/– over £25 valuation	30	40	Not to exceed £100
Londonderry ..	2/6 up to £30 valuation, 4/– exceeding £30 valuation and in all cases of continuation premiums	30	40	Not limited
Tyrone ..	2/6 in all cases	30	40	do.

Table showing the amounts allocated by county committees for premiums to bulls in 1930, and the estimated expenditure in each county :—

County.	Amount allocated.			Estimated expenditure.	Total No. of bulls standing for ordinary premiums in county.
	From joint fund.	From agricultural development fund.	Total.		
	£	£	£	£	
Antrim ..	1,230	500	1,730	1,626	105
Armagh ..	526	230	756	†773	49
Down ..	1,450	670	2,120	1,868	117
Fermanagh ..	468	632	1,100	†1,110	70
Londonderry ..	570	420	990	958	58
Tyrone ..	1,000	500	1,500	1,352	84
Totals ..	5,244	2,952	8,196	*7,687	483

† Excess expenditure over allocation will be met from savings effected in other live stock sections.
* In addition, an estimated expenditure of £415 will be incurred in paying premiums to 82 third-year "special term" bulls, as in these cases instalments from the breeders will not be forthcoming to balance amount of premiums.

Table giving particulars of the bulls selected for and awarded ordinary premiums under the Cattle-breeding Scheme in 1930 :—

County.	Pure-bred registered dairy Shorthorn.		Pure-bred Shorthorn.	Registered dairy non-pedigree Shorthorn.	Aberdeen Angus.	Galloway.	Totals.
	Dam and sire registered.	Dam only registered.					
Antrim ..	15	12	47	6	7	18	105
Armagh ..	8	2	34	3	2	—	49
Down ..	21	7	53	3	33	—	117
Fermanagh ..	14	2	17	7	30	—	70
Londonderry	18	3	28	4	5	—	58
Tyrone ..	18	3	30	2	31	—	84
Totals ..	94	29	209	25	108	18	483

Table giving particulars of the distribution of " Special Term " bulls in 1930 :—

County.	Registered dairy Shorthorn.	Shorthorn.	Non-pedigree dairy Shorthorn.	Aberdeen Angus.	Galloway (for Glens district in Co. Antrim.)	Totals.
Antrim ..	5	2	2	—	7	16
Armagh ..	1	4	5	4	–	14
Down ..	2	10	2	4	–	18
Fermanagh	1	5	2	3	–	11
Londonderry	2	1	2	4	–	9
Tyrone ..	3	3	4	10	–	20
Totals ..	14	25	17	25	7	88

Table showing the number of bulls standing for service in Northern Ireland in 1930 under the Cattle-breeding Schemes :—

Ordinary premium bulls	483
" Special Term " bulls	260
*Double dairy bulls supplied to Milk Recording Associations in 1924-27	14
Subsidised bulls	12
Total	769

* These bulls were placed under a scheme which is no longer in operation. Milk Recording Associations can now obtain bulls under the ordinary cattle scheme.

Table showing the minimum qualifying standards for registration of dairy cows—ordinary and advanced. :—

Breed.	Ordinary Register.			Advanced Register.		
	Milk (lb.)	Butter-fat (lb.)	Percentage of Butter-fat	Milk (lb.)	Butter-fat (lb.)	Percentage of Butter-fat
Shorthorn ..	6,000	210	3	8,000	280	3
British Friesian	8,000	280	3	10,000	350	3
Kerry ..	5,000	175	3	7,000	245	3
Jersey ..	5,000	225	4	7,000	315	4
Any other pure breed or non-pedigree	Same as for Shorthorn.					

Table illustrating the minimum registration yields required in the case of cows which failed to produce a calf within the 14 months' period, but calved within 16 months from the previous date of calving and the deductions which are made when entering particulars in the Register :—

Breed.	Minimum yield to qualify for registration.		Deductions to be made from actual yield for entry in the Register where a calf has not been produced in 14 months but has within 16 months.	
	Milk (lb.)	Butter-fat (lb.)	Milk (lb.)	Butter-fat (lb.)
Shorthorn ..	10,000	350	2,000	Corresponding reduction based on the original calculated average percentage of butter-fat.
British Fresian ..	12,500	437.5	2,500	
Kerry ..	8,750	306.25	1,750	
Jersey ..	8,750	393.75	1,750	
Any other pure breed or non-pedigree	Same as for Shorthorn.			

Table showing yields of pure-bred and non-pedigree cows registered by the Ministry from the 1st October, 1929, to the 30th September, 1930 :—

Breed.	Number of cows registered on a yield of :—				Total No. of cows registered.
	Gallons 500-600	Gallons 600-800	Gallons 800-1000	Gallons Over 1000	
Pure-bred Shorthorns	—	78	22	5	105
British Friesian ..	—	—	3	1	4
Ayrshire ..	—	3	2	1	6
Kerry ..	7	1	—	—	8
Jersey ..	2	—	—	—	2
Non-pedigree Shorthorn	—	630	302	129	1,061
Totals ..	**9**	**712**	**329**	**136**	**1,186**

Table showing the yields of pure-bred and non-pedigree cows registered by the Ministry during the period 1st January, 1922, to 30th September, 1930 :—

Breed.	Number of cows registered on a yield of :—				Total No. of cows registered.
	Gallons 500-600	Gallons 600-800	Gallons 800-1000	Gallons Over 1000	
Pure-bred Shorthorn ..	—	464	154	32	650
British Friesian ..	—	6	25	25	56
Ayrshire ..	—	15	7	2	24
Kerry ..	38	18	2	1	59
Jersey ..	10	16	14	—	40
Red Poll ..	—	1	2	—	3
Non-pedigree Shorthorn	—	4,779	2,091	673	7,543
Totals ..	48	5,299	2,295	733	8,375

Table showing the number of Milk Recording Associations in Northern Ireland from 1921 to 1930 (inclusive) :—

County.	Number of Milk Recording Associations.									
	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Antrim ..	1	4	4	11	13	14	14	17	18	19
Armagh	1	1	1	4	4	5	6	6	7	7
Down ..	—	—	3	2	5	10	12	13	14	15
Fermanagh	1	4	3	6	6	6	9	10	10	9
London-derry ..	—	—	1	4	4	7	7	7	8	8
Tyrone ..	3	4	5	7	10	11	12	13	13	14
Totals	6	13	17	34	42	53	60	66	70	72

Table showing the number of members of Milk Recording Associations in Northern Ireland from 1921 to 1930 (inclusive) :—

County.	Number of Members.									
	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Antrim ..	43	156	168	394	488	447	540	634	596	647
Armagh	14	47	133	167	173	189	274	268	340	339
Down ..	—	—	115	68	186	425	502	531	594	605
Fermanagh	15	117	94	169	198	211	345	360	371	384
London-derry ..	—	—	58	168	132	305	302	292	326	359
Tyrone ..	127	121	176	198	346	391	445	429	451	498
Totals	199	441	744	1,164	1,523	1,968	2,408	2,514	2,678	2,832

Table showing the number of cows entered in Milk Recording Associations in Northern Ireland from 1921 to 1930 (inclusive) :—

County.	Number of Cows entered in Associations.									
	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
Antrim ..	245	1,052	1,074	2,458	2,733	3,100	3,168	3,520	3,403	3,681
Armagh	112	192	506	747	680	859	1,016	1,008	1,156	1,316
Down ..	—	—	544	440	971	1,833	2,266	2,316	2,684	2,994
Fermanagh	133	931	698	1,119	1,044	1,034	1,668	1,805	1,881	1,906
Londonderry ..	—	—	306	922	824	1,793	1,750	1,638	1,849	2,039
Tyrone ..	754	934	1,210	1,417	1,861	2,264	2,297	2,320	2,426	2,634
Totals	1,244	3,109	4,338	7,103	8,113	10,833	12,165	12,607	13,399	14,570

Table showing the number and value of premiums awarded for boars in each of the six counties by the several county committees in 1930 :—

County.	1st year boars.		2nd year boars.		Breeds.		Total No. of boars awarded premiums.
	Value of premiums.	No. of boars.	Value of premiums.	No. of boars.	Large White Ulster.	Large White York.	
	£		£				
Antrim ..	9	18	9	17	33	2	35
Armagh ..	9	13	9	9	21	1	22
Down ..	10	23	8	9	26	6	32
Fermanagh ..	9	11	9	13	19	5	24
Londonderry	10	15	8	8	21	2	23
Tyrone ..	8	28	6	17	39	6	45
Totals ..	—	108	—	73	159	22	181

Table showing the amounts allocated for premiums to boars and the estimated expenditure in each county :—

County.	Amount allocated.			Estimated expenditure.	Total number of boars standing during service season.
	From joint fund.	From agricultural development fund.	Total.		
	£	£	£	£	
Antrim ..	250	66	316	315	35
Armagh ..	140	60	200	198	22
Down ..	150	66	216	302*	32
Fermanagh ..	150	70	220	216	24
Londonderry ..	150	66	216	214	23
Tyrone ..	225	66	291	326*	45
Totals ..	£1,065	£394	£1,459	£1,571*	181

* Excess expenditure over allocation met from savings on other live stock schemes.

Table showing the operations of the Sheep-breeding Scheme in mountainous districts :—

County.	Amount allocated.		Total No. of rams placed out.	Nett expenditure (cost of rams less receipts from sales).	Excess over ordinary allocation borne from agricultural development fund.
	From joint fund.	From agricultural development fund.			
	£	£		£	£
Antrim ..	100	352	68	477	377
Armagh ..	30	58	8	59	29
Down ..	80	282	38	245	165
Londonderry ..	60	213	43	289	229
Tyrone ..	60	282	42	288	228
Totals ..	330	1,187	199	1,358	1,028

NOTE—County Fermanagh did not participate.

Table illustrating the operations of the Sheep-breeding Scheme in lowland districts.

County.	Allocation from joint fund.	Number of premium rams.		
		Border Leicester.	Suffolk.	Total.
	£			
Antrim ..	48	6	—	6
Armagh ..	40	3	—	3
Down ..	120	13	—	13
Londonderry ..	104	12	—	12
Tyrone ..	72	9	—	9
Totals ..	384	43	—	43

NOTE—County Fermanagh did not participate.

GRANTS TO ASSOCIATIONS.

Apart from grants made to Agricultural Show Societies through county committees, special contributions were made by the Ministry directly to the funds of the undermentioned Societies as follows :—

	£
Ulster Farmers' Union (Educational Committee)	1,300
Ulster Agricultural Organisation Society, Ltd.	700
Royal Ulster Agricultural Society	460
North-West of Ireland Agricultural Society	120
Ulster Horticultural Society	75
Ulster Goat Society	50
Ulster Ram Breeders' Association	50
Northern Ireland Utility Poultry Society	40
Northern Ireland Rabbit Society	20
Imperial Fruit Show	20
Ulster Grade A. T.T. Milk Producers' Association	25
World's Poultry Science Association	5

OFFICIALS OF COUNTY COMMITTEES OF AGRICULTURE.

ANTRIM :

Chairman :	Lieut.-Col. J. Patrick, D.L., Dunminning, Glarryford.
Vice-Chairman :	Charles B. Smith, Cragoran, Larne Harbour.
Secretary :	A. B. Clarke, B.A., County Courthouse, Belfast.
Instructors :	P. T. O'Hare, A.R.C.Sc.I. (Agriculture.)
	R. D. Mackay, N.D.A., N.D.D. (Hons.) (Agriculture).
	R. H. Clarke (Horticulture and Bee-Keeping).
	W. R. Saunderson (Horticulture and Bee-Keeping).
	Miss A. M. Nedwill (Poultry-keeping and Butter-making).
	Miss A. Mahony (Poultry-keeping and Butter-making).
	P. McHugh (Agricultural Overseer).
	J. McDowell (Agricultural Overseer).

ARMAGH :

Chairman :	J. J. W. Dunlop, Rosemount, Annaghmore.
Vice-Chairman :	R. R. Murphy, J.P., Lislea, Keady.
Agricultural Organiser :	J. Algie, B.Sc., 4, College Street, Armagh.
Instructors :	S. Jordan, B.Agr. (Agriculture).
	J. Hagan (Horticulture and Bee-keeping).
	J. Scrimgeour (Horticulture and Bee-keeping).
	Miss A. G. English (Poultry-keeping and Butter-making).
	J. Graham (Agricultural Overseer).
	M. Turley (Agricultural Overseer).

DOWN :

Chairman :	James Ireland, J.P., Ivyholme, Lessans, Saintfield.
Vice-Chairman :	George Wallace, J.P., Lakeview, Corbet, Banbridge.
Agricultural Organiser :	J. L. McWhinney, A.R.C.Sc.I., N.D.A., Northern Bank Chambers, May Street, Belfast.
Instructors :	R. W. Dickson, A.R.C.Sc.I. (Agriculture).
	R. F. Small, B.Agr. (Agriculture).
	A. E. Johnston, A.R.C.Sc.I. (Horticulture and Bee-keeping).
	D. W. Baillie (Horticulture and Bee-keeping).
	Miss W. McMullen (Poultry-keeping and Butter-making).
	Miss L. Walters (Poultry-keeping and Butter-making).
	J. G. Jamieson (Agricultural Overseer).
	V. Boyce (Agricultural Overseer).

FERMANAGH :

Chairman :	Rev. Canon John Hall, Garvary, Enniskillen.
Vice-Chairman :	Senator J. Porter-Porter, D.L., Belle Isle, Lisbellaw.
Secretary :	W. H. West, Courthouse, Enniskillen.
Instructors :	D. T. Ritchie (Agriculture).
	J. C. Johnston (Horticulture and Bee-keeping).
	Miss A. M. Callery (Poultry-keeping).
	T. C. Skelly (Agricultural Overseer).
	H. S. Flack (Agricultural Overseer).
	W. R. M. Boyd (Agricultural Overseer).

LONDONDERRY :

Chairman :	H. E. Thompson, M.B.E., J.P., Ballindrum House, Coagh, Moneymore.
Vice-Chairman :	W. McCollum, Drumcroon, Coleraine.
Secretary :	T. K. Caldwell, Courthouse, Coleraine.
Instructors :	D. R. Aiken (Agriculture).
	A. McL. May (Horticulture and Bee-keeping).
	Miss L. Gray (Poultry-keeping and Butter-making).
	Miss E. E. Clarke (Poultry-keeping and Butter-making).
	A. J. McFarland (Agricultural Overseer).
	E. Graham (Agricultural Overseer).
	D. McMullan (Agricultural Overseer).

TYRONE :

Chairman :	John Johnston, Mountjoy East, Omagh.
Vice-Chairman :	Thomas Hegan, J.P., Desertcreat, Tullyhogue.
Secretary :	W. Walsh, Courthouse, Omagh.
Instructors :	E. S. Daly, A.R.C.Sc.I. (Agriculture).
	W. J. Patterson, A.R.C.Sc.I., N.D.A. (Agriculture).
	J. Jamieson, B.Sc. (Agriculture).
	D. McKenzie (Horticulture and Bee-keeping).
	Miss M. H. Davidson (Poultry-keeping).
	Miss M. A. C. Woods (Poultry-keeping).
	P. Dolan (Agricultural Overseer).
	J. M. Flanagan (Agricultural Overseer).
	J. McFerran (Agricultural Overseer).
	W. J. Martin (Agricultural Overseer).

GREENMOUNT

AGRICULTURAL AND HORTICULTURAL COLLEGE,

MUCKAMORE, CO. ANTRIM.

(*Under the Management of the Antrim County Committee of Agriculture.*)

Principal : R. J. FANNIN, A.R.C.Sc.I., N.D.A.

EDUCATIONAL EXHIBITS AT SHOWS.

As usual the exhibit of the Ministry was staged at the Spring Show of the Royal Ulster Agricultural Society in the Exhibition Hall and Annexe.

While the exhibit covered practically all branches of farming, particular attention was given to those sections of the industry which are most remunerative at the present time. Live stock, comprising as it does, 80 per cent. of the agricultural output of Northern Ireland, was given the premier place.

The most economical methods of rearing calves, fattening young animals for baby beef and the feeding of dairy cows were demonstrated, animals treated in the ways recommended being on view. As the number of enquiries as to the correct method of dishorning calves is increasing, a series of actual dishorning demonstrations was given on each day of the Show. One of the greatest difficulties in pork production, especially during winter is the scarcity of separated or skim milk. Several lots of pigs which had been fattened on milk substitutes were on view and information was

given as to what these substitutes were. Four other lots of pigs showing how home-grown foods in various proportions can be used to the best advantage were exhibited. Pig feeders are finding that there is a greater demand for bacon pigs of the York and York-Ulster-cross type than for those of the pure Ulster type, but appear to be under the impression that Ulsters cost less to produce. Experiments conducted over a number of years indicate that this belief is not correct. An experiment was again conducted this year, comprising lots of the three types, and the animals were exhibited, together with the summary of results of previous tests. Particular interest was taken in this exhibit. An interesting and instructive exhibit, particularly to those who purchase suckers for fattening, was provided. This consisted of a sow and her litter of about ten weeks' old, together with figures showing the cost of producing the pigs to this stage. The smallness of the cost impressed many practical feeders and was considerably below the current market value of such pigs. A small section was devoted to showing the improvement in mountain sheep due to the use of good rams.

Poultry keepers had an opportunity of seeing the most up-to-date methods of rearing chickens and managing the pullets and laying flocks so as to get the maximum profits. Several pens of birds and baskets of eggs to represent their produce illustrated the results from different methods of management. Particular attention was given to the necessity for producing quality as well as quantity.

In the horticultural section stress was laid on the importance of spraying and pruning fruit trees, and the best methods of packing and marketing fruit. Modern methods of bee keeping and the best way of marketing honey were also exhibited.

Another section dealt with improvement of pastures, varieties of cereals which have been found to be especially suitable for various districts, potato grading and manuring of farm crops. The Plant Breeding, Plant Diseases, Seed Testing, Animal Diseases, Bacteriology and Chemical Research Divisions of the Ministry staged exhibits showing the practical bearing of their work on farming generally.

Full particulars of the facilities which are available for the Agricultural Education of both boys and girls were made known. For boys, these facilities are (1) Winter Agricultural Classes held in different centres each year, (2) Greenmount Agricultural and Horticultural College, and (3) the Faculty of Agriculture at Queen's University, Belfast. Any boy who shows sufficient merit can avail himself of any or all of these courses without any expense to his people. For girls the courses are (1) Dairy and Poultry Classes in the counties, (2) North-West Agricultural School, (3) School Certificate course at Ulster Dairy School, and (4) Senior or teacher's course at the same Institution for those who show special ability. Admission to the County Classes is free. County Committees provide free scholarships to the North-West School, while only a small fee is payable for the Ulster Dairy School courses.

The Agricultural Economics section dealt with imports and exports of agricultural produce and suggested means by which the imports could be reduced by the better utilisation of home-grown products. Comparative values of the more generally purchased foods were indicated and the importance of using those which are the best value at the time of buying was emphasised. This section also dealt with Marketing and stressed the importance of putting agricultural produce of all kinds on the market in a manner that will attact customers.

Copies of the Ministry's leaflets and other publications were available and were in demand. Those who wished to obtain ordnance maps had an opportunity of doing so.

At the more important county shows during the season the officials of the County Committees of Agriculture staged educational exhibits but necessarily on a much smaller scale than was done at Balmoral. The Ministry gave assistance at these exhibits by lending materials and giving the services of members of its technical staff,

APPENDIX IV.

FINANCE.

AGRICULTURAL LOANS AND SCHEMES.

ACCOUNT OF PARLIAMENTARY GRANTS IN THE YEAR ENDED 31st MARCH, 1930.

SUMMARY OF LOAN ACCOUNTS ON 31st MARCH, 1930.

Amounts contributed from Local Rates and by the Government for the purposes of Agricultural Schemes under the Local Statutory Committees during the year ended 31st March, 1930.

Expenditure on Agricultural and Live Stock Schemes by County Committees of Agriculture during the year ended 31st March, 1930.

Expenditure of Local Authorities (County Councils) under the Diseases of Animals Acts and the Orders thereunder and the Amounts recouped to Local Authorities as from General Cattle Diseases (Northern Ireland) Fund during the year ended 31st March, 1930.

General Cattle Diseases Fund for the year ended 31st March, 1930.

AGRICULTURAL LOANS AND ALLIED SCHEMES.

(*a*) *Purchase of Bulls.*—During the year 14 loans were granted for the purchase of premium bulls. In addition subsidies were granted to four groups of farmers towards the purchase of one stock bull each. Two of these bulls were Shorthorn, one was a dairy shorthorn and one a Galloway. The breeders concerned are required to keep the bulls for five years for the service of pure-bred cows of the same breed as the bulls.

(*b*) *Purchase of Stallions.*—Nine loans were granted for the purchase of stallions. Two of the animals were Thoroughbreds, six were Clydesdales and the remaining one was a Half-bred. The Thoroughbreds were located in Counties Antrim and Down, the Clydesdales in Counties Antrim (2), Fermanagh, Londonderry and Tyrone (2) and the half-bred in Co. Down. Each borrower was also given a subsidy equal, in the case of Thoroughbreds and Half-bred to two-thirds of the purchase price, and in the case of the Clydesdales to one-half of the purchase price, and was required to bind himself to keep the animal for the period of the loan, viz., 5 years, in the district in which it had been located.

(*c*) *Purchase of High-Class Rams.*—One subsidy was granted towards the purchase of a Border Leicester ram to be retained in a district approved by the Ministry for four years and to be used for the service of pure-bred Border-Leicester ewes.

(*d*) *Fencing.*—Eight loans were granted under this scheme, the purpose of which is to enable farmers in poor districts to enclose their arable land or mountain grazing so as to permit of the holdings being used to the best advantage.

(*e*) *Purchase of Agricultural Machinery.*—Two loans were granted—one for the purchase of a corn cutter and grinding mill and one for the purchase of a Fordson tractor.

(*f*) *Live Stock Replacement Loans.*—These loans, it will be recalled, were issued through the joint-stock Banks under Government guarantee of principal and interest. Recovery of instalments, as they mature, is proceeding satisfactorily, the amount of loans so far falling to be redeemed under guarantee as being irrecoverable amounting to less than one-eighth per cent. of the total issues.

The position to date is summarised in the following table :—

Year of Issue.	No. of Loans granted.	Total amount advanced.	Loans repaid in full.		Total amount of instalments paid.	Total amount repaid.	Loans irrecoverable and redeemed by the Ministry.		Percentage of total amount advanced repaid to date.
			No.	Amount.			No.	Amount	
		£		£ s. d.	£ s. d.	£ s. d.		£ s. d.	
1925	982	45,509	114	4,900 0 0	26,883 19 11	31,783 19 11	3	209 6 8	70
1927	482	23,733	12	635 0 0	9,082 17 6	9,717 17 6	1	67 13 2	41
1928	185	8,686	1	100 0 0	3,467 18 8	3,567 18 8	–	—	41
	1,649	£77,928	127	£5,635 0 0	£39,434 16 1	£45,069 16 1	4	£276 19 10	58

(*g*) *Loans for the Purchase of Live Stock.*—This Scheme was introduced in the Spring of 1930 with the object of affording credit facilities to farmers who desire to increase the number of live stock and poultry on their holdings.

The loans are issued through Banks on Promissory Notes discounted at 5 per cent. and are repayable by four equal instalments on 31st December in each of the years 1931-34. Borrowers must provide two sureties who must be approved by the Ministry. Forms of application are obtainable at the various Banks.

Applications may be lodged with the Ministry up to 31st December, 1930, The interest and principal of the loans are guaranteed by the Government under powers conferred by the Exchequer and Financial Provisions Acts (Northern Ireland) 1929 and 1930.

The extent to which the loans are being availed of is indicated by the following table, covering the period to 30th September, 1930 :—

County.	*Loans granted.* *No.*	*Amount.* £
Antrim	9	723
Armagh	37	1,396
Down	44	1,985
Fermanagh	191	7,253
Londonderry	12	966
Tyrone	62	2,589
Total	355	£14,912

Forty-two applications for loans were still under investigation as at 30th September, 1930.

(*h*) *Loans for Purchase of Seeds and Artificial Fertilisers.*—These Loans were first issued in 1929 through joint-stock Banks and under Government guarantee on the terms described in the Ministry's Eighth Annual Report. The Scheme was revived in the Spring of 1930 on terms generally similar to those applicable to the 1929 issue, the rate of discount fixed being, however, 5 per cent. as against 5½ per cent. obtaining for the 1929 loans. Statutory authority for the Government guarantee is conferred by the Exchequer and Financial Provisions Acts (Northern Ireland) 1929 and 1930.

The number and amount of loans granted during the period under review are as follows :—

County.	*Loans Granted.* *No.*	*Amount.* £
Antrim	3	50
Armagh	6	111
Down	7	130
Fermanagh	2	18
Londonderry	1	28
Tyrone	7	109
Total	26	£446

(i) *Loans to cover Losses of Crops and Live Stock due to Floods.*—This Emergency Scheme was initiated in the Autumn of 1929 with a view to making good the exceptionally heavy losses of crops and live stock sustained by the farming community as a result of the serious flooding which occurred on the 6th October, 1929. The effects of the floods were most marked in the Counties of Londonderry and Tyrone where the loss of crops was estimated at £10,000.

The loans were issued by the Ministry on Promissory Notes signed by the applicant and two approved sureties, the rate of interest being five per cent. The loans are repayable by not more than ten equal annual instalments. The first instalment is payable on 31st December, 1931, with interest from 1st January, 1931—the loans being free of interest up to 31st December, 1930. The latest date for making application was 31st December, 1929.

Fifty-six loans in all were granted under the Scheme amounting to a total sum of £3,313.

(*j*) *Scheme for the Improvement of Agricultural Holdings by Drainage and other Works and for extending Employment in Rural Areas.*—This scheme, full particulars of which were given in the Ministry's last Annual Report, was continued during the year. The scope of the original scheme has since been slightly extended so as to admit for grant purposes, works involving the improvement of river and sea embankments, stubbing of whins, fencing and agricultural improvements of a like nature. That the facilities offered are appreciated by the farming community is demonstrated by the large increase in the number of Schemes approved in the 12 months ended 30th September, 1930, as compared with the corresponding period of the previous year. Particulars are as follows :—

County.	Grants approved 1928-29		Grants approved 1929-30.		Total to 30th September, 1930.	
	No.	Amount.	No.	Amount.	No.	Amount.
		£		£		£
Antrim	18	1,019	50	1,733	68	2,752
Armagh	3	31	14	207	17	238
Down	14	1,646	25	681	39	2,327
Fermanagh	4	491	26	1,228	30	1,719
Londonderry ..	5	319	25	1,218	30	1,537
Tyrone	10	801	14	557	24	1,358
Totals	54	£4,307	154	£5,624	208	£9,931

Four loans amounting to £250 were sanctioned during the year to supplement grants approved under the Scheme.

The 208 schemes approved up to the end of the period under review provide for the improvement of some 9,000 acres in all of agricultural land, apart from the improvements to farm roads which many of the Schemes cover. The work done has reached a high standard of efficiency and is calculated to prove of lasting benefit to the farmers concerned, and as the engagement of unemployed men for the purpose of the work is a condition precedent to the award of grants it will be realised that the scheme, viewed as a measure for the promotion of employment in rural areas, is serving a useful purpose.

(*k*) *Emergency Scheme for Repair of Damage to Drains, Embankments, Lands, Fences, etc., caused by Flooding on the 6th October*, 1929.—This temporary scheme was launched simultaneously with the scheme of loans covering losses of crops and live stock to which reference has already been made. In the Counties of Tyrone and Londonderry the damage done to lands and embankments was extensive and it is to these two counties that the special measures of relief were mainly, though not exclusively directed. The assistance offered by the Ministry to sufferers took the form of grants, the award of which was governed by conditions almost identical with those applicable to the scheme for improvement of agricultural holdings which has been dealt with in the preceding sub-section. The one essential difference between the two schemes is that whereas grants under the ordinary scheme are limited to 50 per cent. of the approved cost of the works, works in respect of flood damage are eligible for grant up to 75 per cent. of the cost, subject to the proviso as regards both ordinary and emergency schemes that grants may not exceed the total amount paid in wages to unemployed men engaged specially for the work through the Employment Exchanges. In the case of emergency works requiring employment of foremen or special workers not obtainable from the Exchange, the wages of such special employees may be included in the cost of unemployed labour for the purpose of calculating the grant payable.

The occupiers of land affected by the floods were given the option of undertaking the repairs themselves with financial assistance from the Ministry on the lines described or of allowing the County Council to proceed with the work under the provisions of the Drainage Act (Northern Ireland), 1925. In certain instances where the damage to lands and embankments was of a continuous character involving large and well defined areas, as in the valleys of the Roe and Moyola Rivers, the work of restoration was undertaken by the County Council, the Ministry's scheme being adopted in cases of more isolated damage, though in a number of cases the scheme was availed of by occupants of adjoining lands.

A condition of the Ministry's Scheme was that applications for grant should be lodged not later than 31st December, 1929. Forty-two grants in all were approved under the scheme amounting to the sum of £2,057. Certain works delayed by unfavourable weather conditions or for other reasons were still uncompleted on 30th September, 1930.

Loans to supplement grants were also made available to applicants on terms similar to those applicable under the ordinary scheme for improvement of agricultural holdings.

ACCOUNT OF PARLIAMENTARY GRANTS IN THE YEAR ENDED 31st MARCH, 1930.

Vote No. 1. Class VI. Ministry of Agriculture.

Moneys voted by Parliament to defray the Salaries and Expenses of the Ministry of Agriculture.

RECEIPTS.	£	s.	d.
Parliamentary Grant ..	73,662	0	0
Receipts Appropriated-in-Aid (Law Costs, recovered, etc.) ..	155	17	0
	£73,817	17	0

PAYMENTS.	£	s.	d.
Salaries, Wages and Allowances	56,100	9	3
Travelling, Subsistence & Removal Expenses ..	5,383	4	9
Collection of Agricultural Statistics	1,955	14	6
Rent, Rates and Insurance	2,376	2	7
Fuel, Light, Water, Cleaning Articles, etc. ..	299	15	5
Maintenance, Renewals & Repairs	311	5	5
New Works, Alterations and Additions ..	181	8	6
Printing	1,489	6	6
Stationery, Books & Office Supplies	574	10	7
Stationery Office Publications (N.I.)	301	12	11
Law Charges	79	3	9
Postage, Telegrams and Telephones	2,629	11	3
Incidental Expenses ..	756	18	4
Balance on 31st March, 1930 (to be surrendered)	1,378	13	3
	£73,817	17	0

ACCOUNTS OF PARLIAMENTARY GRANTS IN THE YEAR ENDED 31st MARCH, 1930.

Vote No. 2. Class VI. Ministry of Agriculture.

(Moneys voted by Parliament to defray the expenses of the Ministry of Agriculture in respect of Agricultural Education and Research, Improvement of Live Stock, Agricultural Development, Afforestation and Diseases of Animals, including Sundry Grants-in-Aid and certain Capital Expenditure under 15 & 16 Geo. v., c. 17, s. 13(1) (N.I.) and 16 Geo. V., c. 4 (N.I.))

RECEIPTS.	£	s.	d.
Parliamentary Grant	125,536	0	0
Receipts Appropriated-in-Aid :—			
Fees for testing of Seeds	221	2	1
Plant Breeding Division —Sale of grain, &c.	191	18	0
Animal Diseases Division —Sale of vaccine, &c.	174	19	10
Poultry Division—Sale of eggs, &c.	921	10	11
Entry Fees Egg-Laying Competition	103	0	0
Fees for Inspection of Cows under Scheme for Registration of Pure-Bred Dairy Cattle	61	16	0
Live Stock Breeding Acts—Licence and Appeal Fees	1,228	19	0
Recoveries from borrowers in respect of Live Stock Loans issued through Banks and provisionally redeemed under guarantee	538	9	7
Fees for Licences under the Marketing of Eggs Act (N.I.), 1924	178	10	0
Fees for Licences under the Marketing of Potatoes Act (N.I.) 1928	27	0	0
Fees for Inspection of Potatoes under the above Act	3,370	1	0
Sale of Potatoes and Flax from Experimental Plots	173	13	9
Forestry—Sale of timber &c.	1,561	0	6
Recovery from Empire Marketing Board in respect of expenditure on Empire Marketing Schemes	917	13	6
Recovery from Capital Fund No. 2 in respect of certain New Works	1,205	15	9
Miscellaneous Receipts	45	0	2
	£136,456	10	1

PAYMENTS.	£	s.	d.
Agricultural Research and Faculty of Agriculture	19,906	19	9
Building Grant to Queen's University	1,205	15	9
Hillsborough Research and Experimental Farm	11,095	7	3
Agricultural Education £12,771 3 10			
Less Receipts* 5,043 15 1			
	7,727	8	9
Improvement of Live Stock	8,907	16	11
Live Stock Breeding Acts	280	18	7
Animal Quarantine Station	428	15	0
Diseases of Animals Grant-in-Aid	5,143	3	1
Replacement of Live Stock	1,767	19	6
Poultry Industry	424	17	1
Marketing of Eggs	2,044	9	0
Dairying Industry	197	13	7
Grants to County Committees	28,675	13	3
Grants to Agricultural Societies, &c.	3,392	9	6
Flax and Potato Industries	10,158	7	2
Grants for Improvement of Agricultural Holdings (Unemployment Relief)	2,590	12	3
Emergency Grants in respect of Damage due to Flooding (Unemployment Relief)	90	17	6
Weeds Act	0	12	5
Forestry	10,167	1	3
Unemployment Relief Work (Forestry)	2,843	13	5
Purchase of New Areas for Afforestation	6,167	18	0
Empire Marketing Schemes	1,198	1	3
Miscellaneous	221	7	4
Balance on 31st March, 1930 (to be surrendered)	11,818	12	6
	£136,456	10	1

* £5,043 15s. 1d. pupils' fees and sales of produce at the Agricultural Schools.

ACCOUNT OF PARLIAMENTARY GRANTS IN THE YEAR ENDED 31st MARCH, 1930.

Vote No. 3. Class VI. Ministry of Agriculture.

(Moneys voted by Parliament to defray the expenses of the Ministry of Agriculture in respect of Ordnance Survey and Geological Survey.)

RECEIPTS.	£	s.	d.
Parliamentary Grant ..	8,107	0	0
Receipts Appropriated-in-Aid (Sale of Maps, &c.)	1,394	16	10
	£9,501	16	10

PAYMENTS.	£	s.	d.
Salaries, Wages and Allowances	8,056	0	10
Travelling, subsistence and Removal Expenses ..	39	0	0
Rent, Rates and Insurance	289	19	3
Fuel, Light, Water, Cleaning Articles, &c. ..	81	0	3
Maintenance, Renewals, and Repairs	87	9	9
Incidental Expenses ..	66	19	11
Postages, Telegrams and Telephones	28	8	5
Materials for map Production	371	9	4
Geological Survey ..	–	–	–
Balance on 31st March, 1930 (to be surrendered)	481	9	1
	£9,501	16	10

SUMMARY OF LOAN ACCOUNTS ON 31st MARCH, 1930.

(Loans advanced from Government Loans Fund through Ministry of Agriculture.)

Nature of Loan.	Loans outstanding on 31st March, 1929		Loans issued in 1929-30.		Principal Repaid in 1929-30.	Interest received in 1929-30	Loans outstanding on 31st March, 1930.	
	No.	Amount.	No.	Amount.			No.	Amount.
		£ s. d.		£ s. d.	£ s. d.	£ s. d.		£ s. d.
For the purchase of Stallions	21	1,008 4 7	8	514 8 11	361 6 9	48 4 6	25	1,161 6 9
„ „ „ Bulls	34	1,229 2 2	15	625 13 2	584 0 5	86 18 6	46	1,270 14 11
„ „ „ Agricultural Machinery	5	316 13 9	2	155 5 0	208 18 9	16 16 10	6	263 0 0
For the erection of fencing	9	573 4 6	3	230 0 0	42 11 7	32 17 7	12	760 12 11
For Land Improvement	—	—	7	328 0 0	—	1 15 9	7	328 0 0
For Losses of Crops and Live Stock	—	—	56	3,313 0 0	—	—	56	3,313 0 0
Totals	69	3,127 5 0	91	5,166 7 1	1,196 17 6	186 13 2	152	7,096 14 7

TABLE SHOWING BY COUNTIES THE AMOUNTS CONTRIBUTED FROM LOCAL RATES, AND THE AMOUNTS CONTRIBUTED BY THE GOVERNMENT FOR THE PURPOSES OF AGRICULTURAL SCHEMES UNDER LOCAL STATUTORY COMMITTEES DURING THE YEAR ENDED 31st MARCH, 1930.

County.	Rate in the £.	Total Produce of and Contribution from Local Rates.	Contributions from the Ministry.			Additional Contribution by the Ministry of Finance from the Agricultural Development Fund.	Total Contributions from Government Funds.
			General Grant.	Grant for Special Schemes.	Agricultural Classes Grant.		
	d	£ s. d.	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Antrim	1	2,535 3 5	5,615 (a)	930 7 5	133 15 10	1,503 0 0	8,182 3 3
Armagh	1	1,435 0 0	2,832	643 19 2	36 3 4	850 0 0	4,362 2 6
Down	1	2,829 8 4	4,846	743 17 1	93 5 0	1,556 0 0	7,239 2 1
Fermanagh	1	927 8 0	2,663	827 12 6	35 10 8	1,315 0 0	4,841 3 2
Londonderry	1	1,210 6 8	3,048	941 1 10	138 19 6	1,105 0 0	5,233 1 4
Tyrone	1	1,723 18 10	4,343	1,659 10 4	144 10 7	1,496 0 0	7,643 0 11
Totals	–	10,661 5 3	23,347	5,746 8 4	582 4 11	7,825 0 0	37,500 13 3

(a) This includes a Grant-in-Aid of £1,000 in respect of Greenmount Agricultural College.

TABLE SHOWING EXPENDITURE ON AGRICULTURAL AND LIVE STOCK SCHEMES BY COUNTY COMMITTEES OF AGRICULTURE, DURING THE YEAR ENDED 31st MARCH, 1930.

County	Itinerant Instruction in Agriculture.	Winter Agricultural Classes.	Horticulture and Bee-Keeping.	Poultry-Keeping and Butter-Making.	Live Stock.	Subsidies to Shows.	Grants to Milk Recording Associations.	Agricultural Overseers.	Improvement of Pastures.	Cottage and Farm Prizes.	General Administration.	Scholarships.	Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Antrim ..	1,208 11 4	78 9 6	1,062 1 8	1,528 5 0	2,969 17 6	496 3 3	180 0 0	634 3 1	121 16 7	91 12 3	875 2 8	1,140 3 6 (a)	10,386 6 4
Armagh	724 10 1	37 17 10	1,028 4 6	765 2 7	1,616 17 5	187 7 4	60 0 0	570 14 6	73 4 8	—	682 14 6	355 5 0	6,101 18 5
Down ..	1,139 0 5	83 9 2	926 13 2	1,512 12 0	2,795 18 7	510 5 4	140 0 0	696 4 7	47 12 6	—	892 12 8	1,000 10 0	9,744 18 5
Fermanagh ..	743 6 11	42 18 3	336 2 8	955 10 0	2,301 9 6	85 19 5	100 0 0	771 14 5	111 4 4	52 11 5	583 19 11	192 15 0	6,277 11 10
Londonderry	641 11 9	42 4 1	473 3 11	1,115 7 2	2,687 9 5	178 5 7	90 0 0	833 13 0	95 0 7	—	755 18 3	377 0 0	7,289 13 9
Tyrone	1,759 1 9	75 0 1	330 2 7	1,629 9 7	3,377 1 10	290 0 4	130 0 0	1,143 3 0	172 11 3	—	1,063 12 5	621 15 0	10,591 17 10
	6,216 2 3	359 18 11	4,156 8 6	7,506 6 4	15,748 14 3	1,748 1 3	700 0 0	4,649 12 7	621 9 11	144 3 8	4,854 0 5	3,687 8 6	50,392 6 7

(a) Includes £568 16s. 0d. up-keep of Greenmount Agricultural College.

EXPENDITURE OF LOCAL AUTHORITIES (COUNTY COUNCILS) UNDER THE DISEASES OF ANIMALS ACTS AND THE ORDERS THEREUNDER, AND THE AMOUNTS RECOUPED TO LOCAL AUTHORITIES AS FROM THE GENERAL CATTLE DISEASES (NORTHERN IRELAND) FUND DURING THE YEAR ENDED 31st MARCH, 1930.

Districts of Local Authorities.	Expenditure of Local Authorities.		Receipts from the the dipping of Sheep.	Total Net Expenditure.	Amounts repaid to Local Authorities during the year ended 31/3/1930 from the General Cattle Diseases (Northern Ireland) Fund.
	Salaries and Allowances.	Other Expenses.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
County Antrim	1,175 18 9	1,462 16 2	– – –	2,638 14 11	2,046 3 7
County Armagh	815 13 0	1,194 18 0	– – –	2,010 11 0	1,648 11 0
County Down	1,334 1 6	1,842 4 6	– – –	3,176 6 0	2,524 5 7
County Fermanagh	463 8 4	300 8 3	97 9 0	666 7 7	420 11 7
County Londonderry	760 10 8	722 14 6	128 4 9	1,355 0 5	948 14 10
County Tyrone	1,495 2 2	1,609 13 0	429 13 8	2,675 1 6	1,872 19 3
County Borough of Belfast ..	350 0 0	131 16 5	– – –	481 16 5	282 14 5
County Borough of Londonderry	110 0 8	– – –	– – –	110 0 8	62 0 0
Totals	6,504 15 1	7,264 10 10	655 7 5	13,113 18 6	9,806 0 3

GENERAL CATTLE DISEASES FUND FOR NORTHERN IRELAND.
(16 Geo. V. C. 4.)

Accounts of receipts and payments in respect of the General and Special Accounts of the above Fund for the year ending 31st March, 1930.

GENERAL ACCOUNT.

RECEIPTS.	£	s.	d.
Balance on 1st April, 1929	3,764	8	9
Assessments on Local Authorities	2,493	13	11
Parliamentary Grant (Class VI. No. 2, Subhead C. 4)	4,775	3	5
Proportion of Fines in Prosecutions under Diseases of Animals Acts	148	15	7
Bank Interest	119	10	11
Transferred from Special Account	–	–	–
	£11,301	12	7

PAYMENTS.	£	s.	d.	£	s.	d.
Recoupments to Local Authorities in respect of Compensation and Expenses under the Diseases of Animals Acts				9,806	0	3
Fees	–	–	–			
Travelling Expenses	–	–	–			
Miscellaneous Expenses	8	19	7			
				8	19	7
Transferred to Special Account				–	–	–
Balance on 31st March, 1930				1,486	12	9
				£11,301	12	7

SPECIAL ACCOUNT.

RECEIPTS.

	£	s.	d.
Balance on 1st April, 1929	–	–	–
Parliamentary Grant (Class VI. No. 2, Subhead C. 4)	367	19	8
Salvage of Animals slaughtered in connection with :—			
(1) Pleuro -pneumonia	–	–	–
(2) Swine Fever	20	15	0
(3) Foot and Mouth Disease	–	–	–
	20	15	0
Transferred from General Account	–	–	–
Other Receipts, Viz.	–	–	–
	£388	14	8

PAYMENTS.

	£	s.	d.	£	s.	d.
Salaries of Staff	147	14	8			
Fees	–	–	–			
Travelling Expenses	62	3	0			
				209	17	8
Miscellaneous expenses, including cost of requisites for cleansing and disinfection and casual labour in killing, burying, branding and removal of animals, and other petty expenses.						
(1) Pluero-pneumonia	–	–	–			
(2) Swine Fever	21	17	0			
(3) Foot and Mouth Disease	–	–	–			
				21	17	0
Compensation to owners of animals slaughtered in connection with						
(1) Pleuro-pneumonia	–	–	–			
(2) Swine Fever	157	0	0			
(3) Foot and Mouth Disease	–	–	–			
				157	0	0
Transferred to General Account				–	–	–
Balance on 31st March, 1930				–	–	–
				£388	14	8

APPENDIX V.

FORESTRY.

The Ministry continued to develop its forestry policy on the lines already laid down. A substantial increase was made in the area available for planting in future years, a total of 2,681 additional acres being acquired. The total area now under the control of the Ministry for afforestation is 14,819 acres. The following are particulars of the lands purchased during the year :—

Approximate Area. Acres.		*Situation of Land.*
* 7	..	Durless Black, Co. Tyrone.
173	..	Ballycrum, Co. Londonderry.
259	..	Do.
1,420	..	Springwell Mountain, Co. Londonderry.
808	..	Tollymore Park, Co. Down.
* 14	..	Tullycorker, Co. Tyrone.
Total 2,681		

Legal formalities have yet to be completed in connection with the acquisition of an area of 197 acres at Fathom Wood, near Newry, County Armagh.

An endeavour was made to acquire an area of 1,330 acres at Cleggan, County Antrim, but the owner decided not to dispose of the property.

It is anticipated that it may be possible to acquire an area of approximately 70 acres situated near Ballycastle, County Antrim, which could be worked in conjunction with the other lands in that district.

The total area planted during the season was 969 acres, as compared with 784 acres in the previous season. As will be seen from Table I a total of 794 acres had been planted when the Ministry took possession, and a further area of 4,254 acres has since been planted by the Ministry, representing approximately 7,735,000 trees.

In Table II below particulars are given of the number and species of trees planted at each centre during the season 1929-30. The species were nearly all coniferae, the percentage of each species planted being as follows :—

Norway and Sitka Spruce ..	52.4
European and Jap Larch ..	21.6
Douglas Fir	10.2
Scots and Corsican Pine ..	8.2
Others	7.6

GRANTS FOR PLANTING.

Under this Scheme whereby grants may be given to persons who undertake to plant trees on a commercial scale on their holdings one application was received and a grant paid. In three other cases where grants had been approved in previous years some clearing and planting were done and the grants were duly paid.

SUPPLY OF TREES FROM THE MINISTRY'S NURSERIES.

The Scheme was continued under which farmers were supplied at reduced prices with young forest trees grown in the Ministry's nurseries. Fifty-two persons availed themselves of the Scheme and were supplied with approximately 60,000 trees.

GENERAL.

In accordance with Section 32 (1) (2) of the Irish Land Act, 1909, occupiers of holdings purchased under the Irish Land Acts must obtain the permission of the Ministry before cutting down or uprooting trees which are necessary for the ornamentation or shelter of their holding. During the year such permission was sought and granted in two cases.

The Ministry's forestry inspector, at the request of the owners, visited plantations on two estates and gave advice as to the value of matured timber and the general work of the plantations.

* The area of 7 acres represent a gain in an exchange between the Ministry and a neighbouring owner of two small parcels of land near Knockmany Centre, County Tyrone. The area of 14 acres, adjoins the lands at Favour Royal and can be worked in conjunction with them.

TABLE I.

PROGRESS OF PLANTING.

Centre.	Total Area.	Area planted when Ministry took possession.	Area Planted.								Total area planted up to 30th September, 1930.
			1921–22 1922-23	1923–24	1924–25	1925-26	1926–27	1927–28	1928–29	1929–30	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Baronscourt ..	3,034	179*	467	211	179.5	189.25	262.5	162.3	222.5	185	2,058.05
Ballykelly ..	254	53.5	30	12	7.5	7	—	7.5	3	1.5	122‡
Castlecaldwell ..	303	103	67.5	19.5	—	13	14.5	10	6.5	1.5	235.5‡
Knockmany and Favor Royal	938	168	57.5	19.5	20	22	30.5	61.8	147.5	102	628.8‡
Newcastle and Castlewellan	893	—	—	62	73	117.25	257	119.8	88	81.5	798.55
Hillsborough ..	435	—	—	—	—	—	—	—	60	89.75	149.75‡
Tardree and Carnearney	735	75†	—	—	—	—	—	—	113	99.5	287.5
Glenarm	447	96†	—	—	—	—	—	—	100	102.5	298.5
Ballycastle ..	630	—	—	—	—	—	—	—	44	94.5	138.5‡
Rostrevor.. ..	3,933	20†	—	—	—	—	—	—	—	114.5	134.5‡
Cam Mountain Drumramer Springwell Mountain Ballycrum	2,388	—	—	—	—	—	—	—	—	96.5	96.5
Tollymore Park ..	808	100	—	—	—	—	—	—	—	—	100‡
Totals ..	14,819	794.5	622	324	280	348.5	564.5	361.4	784.5	968.75	5,048.15

* This area was under young wood when the ground was acquired. Since that time 33½ acres have been cut over, thinned and under planted.

† These areas of Tardree, Glenarm and Rostrevor were under young wood when the land was acquired. At Glenarm also an area of 12 acres of mature woods was taken over and has since been cut over by the Ministry.

‡ In addition, the following areas are under old wood, including shelter belts and scrub covered areas :—Ballykelly, 108 acres ; Castlecaldwell, 58 acres ; Knockmany, 60 acres ; Hillsborough, 160 acres ; Rostrevor, 280 acres ; Ballycastle, 30 acres ; Tollymore Park, 300 acres.

TABLE II.

PLANTATIONS MADE DURING THE YEAR ENDED 30th SEPTEMBER, 1930.

FOREST.	Area planted (Acres).						Species planted including replacements (Thousands).						
	Afforested.		Re-afforested.		Total.		Scots and Corsican Pine.	European and Jap Larch.	Douglas Fir.	Norway and Sitka Spruce.	Beech.	Others	Total.
	Conifer.	Broad leaved.	Conifer.	Broad leaved.	Conifer.	Broad leaved.							
Baronscourt	98	—	87*	—	185	—	35.5	29	28.9	206	1.1	42.7	338.2
Ballykelly	—	—	1½	—	1½	—	—	—	.4	3	—	2.7	6.1
Castlecaldwell	—	—	1½	—	1½	—	2.5	.3	—	8.4	—	2.5	13.7
Knockmany and Favour Royal ..	22	—	80	—	102	—	30.4	47.0	19.3	61.6	1	13	172.3
Newcastle and Castlewellan	—	—	81½	—	81½	—	22.9	21.3	80.1	20.3	1	20.7	166.3
Hillsborough	53	—	28	8¾	81	8¾	5.25	9.9	49.6	85.3	7	7.1	164.15
Tardree and Carnearney	89¼	—	10¼	—	99½	—	—	5	—	149.4	—	13.2	167.6
Glenarm	81½	—	21	—	102½	—	—	135.3	2.8	38.4	.5	4.1	181.1
Rostrevor	—	—	114½	—	114½	—	45.4	126.4	1.2	11	2.7	—	186.7
Cam Mountain, Springwell Mountain, Drumramer and Ballycrum	96½	—	—	—	96½	—	—	—	—	167.6	—	3.7	171.3
Ballycastle	94½	—	—	—	94½	—	—	—	—	158.4	—	8.9	167.3
Tollymore Park	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	534¾	—	425¼	8¾	960	8¾	141.95	374.2	177.3	909.4	13.3	118.6	1,734.75

* 4½ acres of this total form part of the young woodland taken over, this area having been heavily thinned and underplanted.

APPENDIX VI.

SURVEYS.

(*a*) ORDNANCE SURVEY.

FUTURE PRINTING ARRANGEMENTS.

Prior to the transfer of the Northern Ireland Ordnance Survey to the Government of Northern Ireland, the work of drawing and printing maps which had been revised on the ground had fallen into arrear.

Every expedient has been resorted to in an endeavour to overtake these arrears, but for some time past it has been quite apparent that the existing printing machinery was unable to cope with more than the printing necessary to keep up stocks of existing maps to supply public demands, and that the machinery was quite inadequate to deal with the accumulated arrears which had arrived at the printing stage.

The problem thus presented was during the year most carefully examined in all its aspects and the assistance of both H.M. Stationery Office and the Ordnance Survey Office, Southampton, was received in an endeavour to find the most satisfactory solution.

It was finally agreed that the Southampton Office would immediately relieve Belfast of the work of overtaking the arrears of printing. It is expected that the overtaking of the arrears will require a period of three years, during which the Belfast office will execute its own current printing work.

In connection with the revision of maps on the 6-inch scale, however, the photographic reduction from the 12-inch scale plans and the subsequent printing will at once be undertaken by Southampton.

When the arrears have been overtaken Southampton will take over the current printing of the Belfast office, as consideration of the question clearly showed that to continue printing at Belfast would be uneconomical mainly in view of the fact that the output would be too small to justify the overhead costs of maintaining an efficient printing equipment. This decision briefly means that the Northern Ireland Survey will ultimately be responsible for the actual revision on the ground and for the subsequent drawing work. When, however, the revised plans reach the printing stage they will be sent to Southampton for printing. Of course the printing at Southampton will be on behalf of the Northern Ireland Survey and its cost will be refundable from Northern Ireland funds.

FIELD WORK.

It was indicated in the last Report that special revisions of Urban areas were to be undertaken and during the year interim revisions of parts of Belfast, Whitehead, Larne, Ballymena and Carrickfergus were made. The results of all but Belfast will be published early. The area revised amounted to 10,571 acres.

DRAWING.

The preparation of 25-inch scale maps of Antrim and Londonderry was carried on, 131,000 acres being drawn and 147 plans being completed and republished.

Three 12-inch scale plans of Co. Down and one of Co. Antrim have been corrected for reduction to 6-inch scale. One has been published and 12 are being reduced and printed at Southampton.

PRINTING, &c.

8,319 maps were printed and issues made to the number of 10,614 to value of £1,491.

The receipts during the period amounted to £1,387 15s. 7d.

STOCK.

The stock of maps on hand on 31st March, 1930 was 125,844, exclusive of those in hand of agents.

(*b*) GEOLOGICAL SURVEY.

Issues of 40 maps and 25 memoirs were made. Some of the publications are out of print and the demand does not at present warrant reprinting.

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